

BRITISH COLUMBIA.

COLUMBIA RIVER
EXPLORATION,

1865-6.

INSTRUCTIONS, REPORTS, & JOURNALS

RELATING TO THE

GOVERNMENT EXPLORATION

OF THE COUNTRY LYING

BETWEEN THE SHUSWAP AND OKANAGAN LAKES AND THE
ROCKY MOUNTAINS.



VICTORIA, B. C.,

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1866.

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COLUMBIA RIVER EXPLORATION, 1865.

NO. 1.—LETTER OF INSTRUCTIONS FROM CHIEF COMMISSIONER OF LANDS AND WORKS TO MR. MORTLEY.

Lands and Works Department, New Westminster,
8th July, 1865.

Sir,

THE recent discoveries of Gold on the Columbia River, above the Arrow Lakes and on the head waters of the Kootenay River, having rendered it of immediate importance to determine and lay out the best line for a Waggon Road from the Lower Fraser to these New Mining Districts, you have been selected to conduct a reconnaissance of the Country lying to the Eastward of the Okanagan and Shuswap Lakes, and between the Columbia River north of the Upper Arrow Lake, and the passes of the Rocky Mountains, in the vicinity of the sources of the Columbia and Kootenay Rivers.

Mr. Dewdney's reports of the character of the country bordering to the North on the 49th Parallel of North Latitude, leave but little hope of the practicability of a Waggon Road being constructed to the Eastward of the Columbia River, in continuation of the existing Trail from Hope; it is therefore, hoped, and confidently expected, that the desired connection with the South Eastern section of the Colony may be secured by way of Lytton, and the Kamloops and Shuswap Lakes.

Your attention will be first directed to determine at what point a Road, to connect with a good Steam-boat landing at the lower extremity of Kamloops Lake, should branch off from the Cariboo Road. This point, it is supposed, will be found to be near the junction of Cache Creek with the Bulkley, from whence a good line to Kamloops Lake, with easy grades and good road material, is reported to exist.

Your report on this subject will be looked for at an early date, including an approximate estimate of cost of constructing an 18 feet Waggon Road, in accordance with the usual specification furnished by this Department for similar work.

From the lower end of Kamloops Lake, there is stated by Mr. Turner, who passed up this route last October, to be uninterrupted navigation for Steamers not drawing over 18 inches of water, to the upper or Eastern extremity of Shuswap Lake, a distance of about 120 miles.

The only doubtful portion of this long line of navigable water seems to be about 2 miles below the Little Shuswap Lake, and the three miles of river connecting Little Shuswap Lake with Shuswap Lake proper. Of these portions, you will make a careful examination, by sounding and otherwise, and you will obtain all possible information from the Indians living in the neighbourhood, as to lowest depth of water, greatest rise of freshet, duration of ice obstructions, &c. Of the whole length of navigation you will, in passing along make a casual survey, and report generally, and as fully as possible, all the facts you may be able to ascertain on the subject, as well as your own opinions as to the practicability of this navigation.

From Kamloops, you are to detach a Surveyor of your party to pass over the Trail by the head of the great Okanagan Lake to Cherry Creek, and thence up Cherry Creek by way of the pass through the Gold Range, the existence of which pass has been communicated to Government by Captain Houghton (a copy of whose Report is furnished you herewith) to the Columbia River. Having thoroughly examined this pass, the gentleman whom you may select for this duty is to make his way by canoe up river, carefully noticing whatever indications may be afforded by the Country (North of the 50th Parallel of North Latitude) on each side of the river for a practicable line of Road; and to report and refer to you at or above the Dalles de Mort.

In the meantime, yourself and the remainder of your party will continue carefully reconnoitering and noting the features of the navigation on to the Eastern end of Shuswap Lake, and will thence undertake the first main object with which you are entrusted—which is, to ascertain the best line for a Waggon Road from the Eastern end of Shuswap to the Columbia River.

Mr. Turner reported a practicable route for a Waggon Road by the Trail along which he passed, but this line bears too much to the Northward to suit the direction of the communication sought to be opened up, which should be, if possible, about due Eastward from the end of the Southern or South-eastern arm of the Lake, to strike the Columbia River in the neighbourhood of the Dalles de Mort.

You will expend whatever time may suffice to convince you that you have ascertained the best line of communication between the Shuswap Lake and the Columbia River; and this done, should your reconnaissance result, as I confidently anticipate it will, in the discovery of a fair line for a Waggon Road, you are to leave one of your party to blaze out the exact line, and send a report of the same by express to this office, stating what in your judgment would be the cost of cutting out a good Pack Trail, with an estimate for the construction of an 18 feet Waggon Road. In deciding on the advisability of any expenditure on this work, Government desire to have the assistance of any information you may acquire on the spot, as to the richness and extent of the Gold workings on the Columbia River; and I have to request, therefore, that you will furnish in your report any reliable data on this head that may come to your knowledge.

Having, as I am requesting you will do, succeeded thus far in accomplishing the object of your expedition, and having established a depot of provisions to fall back upon, you will now proceed to explore the Country to the Eastward of the Columbia River and Arrow Lakes, and endeavour to ascertain the line of communication from the point where your line from Shuswap strikes the river in a South-easterly direction, across the Selkirk Range of mountains, to the head waters of the Columbia and Kootenay Rivers.

So little is known of this region that I can offer no suggestions for the guidance of your reconnaissance, further than that, although it would be preferable that the line of road should cross the Columbia by Ferry and continue directly from the opposite bank on its proper course, yet, failing this, you may find a pass across the Dividing Range, to the Eastwards from some point on the Columbia further South than that where the Road from Shuswap strikes the River—so that, in case it be necessary, the traffic might drop down stream to take a fresh departure by road from some more available point.

Mr. O'Reilly will be informed of your probable arrival in his District in October, and will be requested to aid your Exploration by all means in his power; and I will forward to Mr. Dewdney extracts from these instructions, so that he may be informed of your probable movements, and be enabled, should circumstances so direct, to put himself in communication with you.

I desire to impress upon you the importance of your giving full details in your *Exploration Journals* of all that presents itself to your notice—and that you should convey the same strict injunctions to each of your party, when on detached duty—so that your Journals when forwarded from time to time as occasions offer to this office, the Government may be placed in possession, not only of the opinions derived by you as the result of your observations, but of the very facts on which such opinions are based.

The strength of the party, with the charge of which you are entrusted, is to consist of two Surveyors, Mr. Green and Mr. Turnbull—of Mr. Layton, who is to act as your Commissary and in any other capacity you may find him of use—of Mr. Wm. Hick, Mr. Conway, and two other Assistants to be selected by yourself; and of such further Indian helpers for packing and canoeing as you may find it necessary to employ.

I need perhaps not add to what I have already verbally impressed upon you as to the economical expenditure of the means placed at your disposal. I look to you to ensure that all the camp and travelling expenses of this Expedition shall be as low as the exigence of the service will admit; and, as the importance to the Colony of the successful issue of the service with which you have been entrusted is great and immediate, so do I rely on the zeal and unremitting exertions of yourself and those under you in securing such a result, as far as circumstances will permit.

I have, &c.

JOSEPH W. TRUTCH,

Chief Commissioner of Lands and Works and Surveyor General

W. Moberly, Esq.

No. 2.—MR. MOBERLY TO CHIEF COMMISSIONER OF LANDS AND WORKS.

Kamloops, July 16th, 1865.

Sir,

I HAVE to inform you that I arrived here last night, having been detained a day and a half at Cornwell's, as the Indians would not pack our things up here; the remainder of the party with the baggage have only just come in.

As yet I have not been able to make any arrangements with Indians to accompany our party, but hope to be able to get some to-morrow, and if so shall leave on the 18th, for Shuswap Lake.

I shall detach Mr. Turnbull with one white man and Indians to explore the line *via* Okanagan Lake and Cherry Creek, and thence up the Columbia River until he meets my own party. I propose to try for a more southerly line than that explored by Mr. Turner last year, and shall send Mr. Green over the above line with Mr. Layton and the supplies to the Columbia River, as from all I can learn this is the only way we can get our supplies conveyed across the portage between Shuswap Lake and the Columbia River.

I have heard that Captain Monatt was well satisfied that the navigation from the foot of Kamloops Lake, to the head of Shuswap Lake, is suitable for River Steamers.

The current report here is, that there are about 400 men at work in the neighbourhood of the Big Bend, but no reliable information has as yet been received.

As Mr. Nind informed me on my way through Lytton, that I might be disappointed in getting supplies at Kamloops, I purchased about two months' supplies from Mr. De Nivian at Lytton, which I expect will be here to-morrow, the prices delivered at Kamloops being much lower than the rates you gave me as those of the Hudson's Bay Company.

Mr. Layton has just arrived, and by him I have received your letter of the 13th, instant. It is my opinion that the point where the branch road to Kamloops Lake should connect with the Yale and Clinton Road is where the last named road first strikes the Buonaparte River, the distance from that point to Savona's Ferry is about 20 miles, and a road 18 feet in width between these two points, would cost about £5,000, the grades would be excellent, and only two short bridges required.

I shall write again before I leave for Shuswap.

I regret to say that I cannot find out where Mr. Orr's party are at present, Mr. Bennett of the Hudson's Bay Company, says he thinks they are camped on the North River about 200 miles from this place, and probably have gone across by the Clearwater Trail to the Big Bend. Mr. Bennett informs me that the Indians make this portage in one day, with horses. If I can find out before my return that Mr. Orr's party have not examined this pass, I will endeavour to have it explored in the Autumn.

I have, &c., &c.

W. MOBERLY.

J. W. Trutch, Esq.,

Chief Commissioner of Lands and Works and Surveyor General,
British Columbia.

COLUMBIA RIVER EXPLORATION, 1865.

No. 3.—Mr. Moberly to Chief Commissioner of Lands and Works

Hudson's Bay Post, Great Shuswap Lake,

Sir, I have to inform you that I arrived here this morning with my party, and to-morrow shall send the whole of them, with the exception of two Indians, over to the Columbia River; I shall take the two Indians and examine the easterly and southerly shores of Great Shuswap Lake, and if I find a pass through to the Columbia, shall cross to it in order, if possible, to connect the navigable waters of the Shuswap and Columbia Rivers by a direct line.

I have instructed Mr. Green to examine two lines from this place to the Columbia, one by the original trail, and the other by a new line discovered by Mr. Perry. (The Mountaineer) when services I have engaged. Mr. Perry tells me he considers the original trail seventy miles in length, and the new one from thirty-five to forty miles; he also informs me that the grades are good on the better line, and the principal work to be done in opening a trail or even wagon road, will be chopping and clearing the timber.

I find the distances in all cases much over estimated, particularly from Kamloops to this place. The following are my estimates of the various distances from Cache Creek:

Cache Creek to Sarana's Ferry.....	20 Miles.
Sarana's Ferry to Kamloops.....	25 "
Kamloops to foot of Little Shuswap Lake.....	9 "
Little Shuswap Lake.....	41 "
River between Little and Great Shuswap Lakes ..	2 "
Great Shuswap Lake.....	36 "

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From Kamloops to the foot of the Little Shuswap Lake on the southerly branch, there is almost a natural Wagon Road; on the northerly bank to the same point, a good deal of work would be required above the Okanagan Trail. There are good pack trails for horses on both sides of the river from Kamloops to this lake; the one on the southerly bank terminates here, as the shores of the lakes and rivers are mountainous, thickly timbered, and rocky, the Indians, however take horses along the southerly side of the Little Lake, and a portion of the Great Lake during low water, when they make trips to Kootenay and the Rocky Mountains: animals cannot pass at present.

Enclosed I forward a tracing shewing that portion of the Shuswap River and Lakes explored by me. From Kamloops to the Little Lake, there is abundance of bunch grass, but hardly any timber; from the Little Lake to the head of the Great Lake there is not any bunch grass, the whole Country being thickly timbered with Fir, Poplar, Birch, and Cedar, of a small size, excepting on some of the flats where there is a finer growth.

I hear from Mr. Perry that about 75 men are at work on a Creek (Cairne's Creek), flowing into the Columbia on its easterly bank, a short distance from where the trail I send Mr. Green to explore will strike it. These men he says are preparing to mine in a substantial manner, sinking shafts, building flumes, &c., &c., and are sanguine of good returns, having found very coarse Gold, with such prospects as lead them to believe that it exists in large quantities.

I have, &c., &c.,
J. W. Trench, Esq. (Signed) W. MOBERLY.

Chief Commissioner of Lands and Works and Surveyor General, B. C.

No. 4.—Mr. Moberly to Chief Commissioner of Lands and Works.

Columbia River, 4 miles below Dalle de Mort,

Sir,

Since writing my last Report, I have to inform you that I examined the Country in a southerly direction for a distance of forty-five miles from the Hudson's Bay Post, at the head of the north-west arm of the Great Shuswap Lake, to the Spill-e-mu-chem River, (improperly called on our maps the Pellamchar River) which falls into the Great Shuswap Lake, at the south end of the south-east arm, and have been unable so far, to find a pass suitable for a Wagon Road.

Finding that to continue exploring up the Valley of the Spill-e-mu-chem River would take me much time, and would bring me into the district I intend Mr. Turnbull to explore after he completes the Cherry Creek line, and as it was necessary for me to meet Messrs. Green and Turnbull on the Columbia, and see that the supplies were being properly forwarded, (I have had much trouble with our Indians) and as I wished to ascertain definitely where the Head of Navigation for Steamers on the Columbia River, above the Upper Arrow Lake really is—the character of the banks of the Columbia River for roads—the exact position of the different mines now being worked—the character of the passes examined by Mr. Green—and if possible, the locality of the pass through the Selkirk Range, on all of which the location of a Wagon Road from Shuswap Lake to the Columbia River would to a great degree depend, I decided to go over to the Columbia River, and having ascertained as much of the above information as possible, resume the examination of the mountains to the south for a pass, if possible, to connect with the south-easterly waters of the Great Shuswap Lake or its tributary the Spill-e-mu-chem River, particularly as I found that the high dividing range between the Shuswap and Columbia waters is immediately west of the Columbia River, and therefore much more easily examined from it.

I find the pass proposed by Mr. Perry, and explored by Mr. Green, to be a very good mountain pass, and about 40 miles in length, over the whole of which a good Mule Trail can be constructed at a small outlay. This end of the Trail will be 4 or 5 miles below the "Dalle de Mort," 30 miles below Gold Creek, and 10 above Cairne's Creek (by the miners estimates of the distances), the two principal creeks at present worked by miners on the Columbia River, and immediately opposite to it is a large valley running into the Selkirk Range (Downie's Creek Valley), which has been explored by Mr. Perry for a distance he says of 60 miles, and reported by him to be a

very good line for a road as far as he went. I think it probable Mr. Perry has over estimated the distance he went up the valley, but as I have found his description of the valley from Shuswap Lake to this place very correct, I am inclined to place some confidence in his description of the valley above mentioned.

On my way over here I examined the Horse Trail which I originally intended Mr. Green to explore, but finding it went up a mountain for two miles, at an angle of about 60°, I gave it up on reaching the top.

The objections to this Pass for a Wagon Road are that after the twenty-third or twenty-fourth mile from Shuswap Lake is reached, the "Divide Mountain" has to be ascended, which by Barometer I made 2807 feet above the river bottom at its foot, and which I followed all the way from Shuswap Lake. The elevation of this valley, at the foot of the mountain is 962 feet above Shuswap Lake, thus making the whole height to be attained in getting from Shuswap Lake to Columbia River about 3840 feet. A good grade can be got up the mountain, but the road will have three or four zigzags. On the plateau at the top of the mountain, there is a good deal of soft ground, with gravel bottom. The descent to the Columbia River is long, being a distance of eight or nine miles.

I should say this road in ordinary seasons will be passable for wagons from the beginning of June until the end of October. This line, with the creation of four or five miles on the summit plateau, is thickly timbered with large sized cedar, fir, hemlock, spruce, and some white pine. The cost of a Wagon Road 18 feet in width, with a 65 feet brush clearing, I estimate at about \$23,000. This line will make a capital Sleigh Road in the winter.

Finding it to be a most difficult, tedious, and expensive undertaking to get our supplies over to the Columbia River; that this is the shortest and cheapest way to get supplies into the mines now worked on it, as animals are now at the head of Shuswap Lake with loads of provisions, &c., on their way to these mines—as the miners are almost destitute of provisions, and such as they have costing enormous prices, therefore, rendering it impossible for them to prospect, and in danger of being starved out altogether—as the immediate opening of a passable trail for animals will, in all probability secure the trade of these mines to the Fraser River route—and as the season is well advanced, I concluded it would be better to make immediate preparations to have the fallen timber and brushwood cleared away sufficiently to get animals over, and have therefore sent Mr. Hick back to set eight or ten men to work, with an order on the Hudson's Bay Company to forward for this work: 1,000 lbs. Bacon, 1,500 lbs. Flour, 250 lbs. Beans, 150 lbs. Sugar, 2 doz. Axes, and a few other supplies, and have told him that as I shall not be back, I have written informing you what I have done, and that he will receive further instructions from you, as to the execution of the work, the obtaining of further supplies if necessary, and money to pay off his men with. I think, that at the outside, he should not have to expend over \$500 on this work, and if he can avoid some corduroying, twenty men ought to complete the work in three or four weeks. I have instructed Mr. Hick to cut away the timber and underbrush throughout the entire length at first, so as to enable my Indians to pack over, and afterwards he may go back and execute such corduroying and grading as may be absolutely required.

It is my impression that any line that may hereafter be discovered, if one should exist, from the Valley of the Spill-e-en-chem to that of the Columbia River, will be altogether too far to the south for the supply of the country above the "Little Dalles," (the rapids some twenty miles above Upper Arrow Lake) and which includes all the different localities where mining is now carried on above the Upper Arrow Lake. The only line north of this one, would be that traversed by Mr. Jenkins, in October, 1864, which is some thirty or thirty-five miles longer than this one, and is now being examined by Mr. Green. The one from the North River to the Boat Encampment could only be brought into requisition should we find that there is not any Pass through the Selkirk Range, and then that line if found to be practicable, could not compete with this for the supply of the mines below the Boat Encampment, but might be used to connect the road from the Vermillion Pass and Upper Columbia with Kamloops Lake.

Goats can now be packed to the foot of the Little Shuswap Lake, a distance of twenty-six miles from Kamloops, over a crooked trail, with abundance of grass; from that point to the head of the N. W. Arm 1½ cents per lb. ought to pay very well for the packings; from the head of the N. W. Arm to the Columbia River, 4 cents per lb. would be a very fair rate indeed; there is feed for animals about eleven miles from the head of the Arm, and a great abundance at the Summit some twelve or fourteen miles further on.

As the canoe I am building will be finished to-morrow, I shall start down the Columbia the day after to explore its banks to the Upper Arrow Lake, to try again for a southern pass, and to ascertain where Steam-boat navigation ends above the Upper Arrow Lake, about which the greatest difference of opinion exists amongst the boatmen I have seen on this river, some saying that Steamers can get up to the "Dalle de Mort" four miles above this place, and others affirming that they cannot possibly get above the head of the Upper Arrow Lake, they tell me that a boat heavily laden will take from eighteen to twenty days to get from Shepherd to Cairne's Creek.

Colville flour is held at 60 cents per lb., credit; bacon (nominally) hardly any on the river \$1.25 per lb.; beans 75 cents; mining tools, boots, and clothes are not to be had.

There are about 150 miners on Gold, French, and Cairne's Creeks. I am told that French Creek flows from the N. E. and falls into Gold Creek about twenty miles from its mouth. The mining reports are very good, and the men I have seen are much inclined to believe that the creeks of the Columbia will rival those of Cariboo, provided they can get fool at such a rate as will enable them to live cheaply and prospect the country. Up to the present time, no prospecting has been done, excepting on the above creeks, and on a few bars on the Columbia, although the creeks falling into the Columbia are very numerous, and have plenty of water in them.

I have posted a notice on the Hudson's Bay Company's document at the head of the N. W. Arm, making a Reserve of the land in that locality; the enclosed is a copy of it.

I remain, &c.,

J. W. Trutch, Esq.,

(Signed.) W. MODERLY.

Chief Commissioner of Lands and Works and Survey General, B. C.

No. 5.—MR. MCBEELY TO CHIEF COMMISSIONER OF LANDS AND WORKS.

SIR,

Columbia River, September 10th, 1865.

Since writing my last Report, I have examined the Columbia River, from a point about four miles below "Dalles de Mer" to the head of Upper Arrow Lake, and am of opinion that Steam-boat Navigation terminates at a rapid known as the Little Dalles, the foot of which is about twenty-one or twenty-two miles above the head of Upper Arrow Lake.

I found a valley, or rather a split, through the Mountains, by which "The Eddy," two miles below "The Little Dalles," on the Colimet in River, can be reached from the mouth of Eagle Creek, which falls into the south-easterly arm of Shuswap Lake, and a branch valley running from it in a southerly direction from "Lake of Three Valleys" to the valley of the Spill-e-mu-chem River. I carefully examined the pass, *via* Eagle Creek, until I reached point A. (shown on Sketch Map), which point I found to be 240 feet above the level of Shuswap Lake. From the top of a high Mountain above this point I saw a fine valley running all the way to Shuswap Lake, and also the valley connecting "The Lake of Three Valleys" with the Spill-e-mu-chem River. As we were quite out of supplies and our boats worn out, we were compelled to return, leaving a portion of the valley, and, if possible, not actually walked over. On my way down I shall go over this portion of the valley, and, if possible, also the valley connecting it with the Spill-e-mu-chem River. The height of the divide between the source of the Eagle Creek and the waters running into the Columbia River, I found to be, by barometer, 407 feet above the level of the Shuswap Lake, and 280 feet above that of the Columbia River at "The Eddy." I do not apprehend any difficulty in constructing a Wagon Road by this route, or even a Railway, but there will be a good deal of heavy blasting in places.

The branch valley to the Spill-e-mu-chem River I look upon as of great importance, as it would be the line for a Railway—and I believe the only one—connecting the Columbia waters with those of the Thompson River, in the vicinity of Kamloops, should such a work be undertaken at any future period.

South of Eagle pass, as far as the Upper Arrow Lake, and north of it to the pass from the head of the N.W. arm of Shuswap Lake, with the exception of two or three short valleys, I found the country to the westward of the Columbia River blocked up with ranges of high, rugged, snow-capped mountains, varying in height from three to nine thousand feet.

On the opposite side of the Columbia, I discovered two valleys, which run a long distance into the Selkirk Range. One of these valleys is about two and a half or three miles below "The Little Dalles," and almost opposite to the Columbia River terminus of the Eagle Creek Pass. The other is at the head of Upper Arrow Lake.

I am now about to examine the upper of these two valleys myself, and send Mr. Turnbull to explore the Arrow Lake one. Mr. Green is now exploring the valley of Gold Creek, to see if a pass can be got through the Selkirk Range in that locality.

Mr. Turnbull reports a very good line for a Wagon Road from the head of Okanagan Lake, *via* Cherry Creek to the Lower Arrow Lake, and computes the distance at about eighty miles. As I think this line is altogether too far to the south, I do not consider it necessary to give further particulars at present. Mr. Turnbull lost both canoes and a portion of his supplies on the way up the river, and was deserted by his Indians. This has caused me a good deal of delay in getting the parties to the eastward of the Columbia River.

Mr. Green's report of the line he went to explore opposite the mouth of Gold Creek and westward of the Columbia River is altogether unfavourable.

On completion of the explorations we are now about to make of the three before mentioned valleys I shall bring our work to a close for the season, to the eastward of the Columbia River, as Mr. Turnbull reports that there are not any valleys between the mouth of the Kootenay River and the head of the Upper Arrow Lake running into the Selkirk Range, and a high range of mountains on the westerly side, extending from his Cherry Creek line to the pass from "The Eddy" to Shuswap Lake, and as the valleys we are now about to explore, are the only ones we have been able to find between the head of the Upper Arrow Lake and Gold Creek; and also, as we cannot get Indians, and it would be impossible at this season of the year to get supplies forwarded to continue our explorations any further to the eastward, particularly as the ones we now have in hand, will more probably take us from four to six weeks to complete.

I think, that should the country to the eastward of the Selkirk Range, and in the vicinity of the Big Bend be explored at any future time, the best plan will be for the exploring party to proceed direct to Wild Horse Creek and obtain their supplies at that point, and then by building canoes on the Upper Columbia, they will be able to gain easy access to the country on both sides of the river, from its source to the Big Bend, and avoid the dangerous and tedious navigation from the "Dalles de Mer" to the Big Bend.

I enclose a sketch map of our different explorations. We found on closing the lines from Kamloops *via* Okanagan, Cherry Creek, and Columbia River, and that by Shuswap Lake, that we agreed almost exactly in Longitude, but were some ten miles out in our Latitudes; neither our Latitudes or Longitudes agreeing with the Official Map. As I have instructed Messrs. Green and Turnbull, on their return, to make a traverse of the line of trail from this place to Shuswap Lake, and a Survey of the Shuswap and Kamloops Lakes and Rivers, we will be able to get a very accurate Map of this portion of the Country, particularly as we can now get the Latitudes of all important points, having received the Sextant you sent up from Kamloops; should time permit, I shall also have a traverse made from the lower end of Kamloops Lake to Yale, and stations fixed at the way from the Columbia River to that Town, so that this will be a fixed line from which branch surveys can be commenced at any future time. If you could have a traverse made of the Telegraph Road from New Westminster to Yale, to connect with the one I shall make, it would enable us to fix the position of the Columbia River with regard to New Westminster.

I hear from Mr. Hick that he is getting on very well with the rail, and will probably have it opened throughout in twelve or fourteen days. Since my recent trip down the Columbia, I am more fully convinced than ever that this, under any circumstances, would have been the proper

line to open this season for pack animals, not only on account of its direction, but also of its cost. The accounts from the Mines of French and Cairn's Creeks are daily improving, and the fact that on both these creeks, immediately after the water fell, the Miners began to take out considerable quantities of Gold, speaks volumes in favour of the supposition that the range to the eastward of the Columbia is highly auriferous, as these creeks are both in the same range of mountains, although fifty or sixty miles apart.

The want of an Officer to issue Mining Licences, and settle disputes between the Miners, is beginning to be felt, and the presence of one much wished for by the Miners.

J. W. Trench, Esq.,
Chief Commissioner of Lands & Works and Surveyor General,

I remain, &c.,

(Signed) W. MOBERLY.

British Columbia.

No. 6.—MR. MOBERLY TO CHIEF COMMISSIONER OF LANDS AND WORKS

SIR,

New Westminster, December 18th, 1885.

You will have seen by my last Official Report, written on the 10th of September, ultimo, that I had succeeded in accomplishing one of the chief objects of the Expedition of which I had charge; namely, the connection of the valleys of the Fraser, Thompson and Shuswap waters with those of the Columbia River, by a low pass suitable either for a Wagon Road or a Railway; and that there was only a portion of this pass I had not actually been over. In a subsequent portion of this report you will also see that my anticipations, with regard to that portion of the pass then not examined, have been more than fully realized, and that there will be no difficulty in locating a line of road, at a low level, from the shores of the Pacific to Palliser's Vermillion pass through the Rocky Mountains, if the valley of the Columbia River, from the easterly terminus of the above mentioned pass from Shuswap Lake, is followed. As this route by the valley of the Columbia would, however, necessitate a considerable deviation from the direct line sought, my next object was to find a way through the Selkirk Range of mountains, with as little deviation from the above line as possible. I therefore sent Mr. Green to explore the valley of Gold Creek, Mr. Turnbull the valley remaining in an easterly direction from the head of the Upper Arrow Lake, and proceeded myself up the valley of the Illecillewaunt River, these being the only valleys by which I thought it at all likely the much wished for pass through these mountains could be obtained. I regret to say we were all obliged to leave our several explorations incomplete, owing to the lateness of the season and the impossibility—principally on that account—of getting Indians to go far into these mountains. I may here state, judging from the character of the mountains on both sides of the valley of Gold Creek as reported by Mr. Green, and that of the Illecillewaunt River examined by myself, that should a further exploration of them result in the discovery of a pass at a lower level, I think it very problematical indeed if it would be advisable to adopt either of them as the line for the main thoroughfare to the Vermillion Pass in the Rocky Mountains as the valleys in places are very narrow, and the mountains on both sides steep and subject to heavy snow slides.

Should the pass partially explored by Mr. Turnbull prove to be a good one throughout its entire length, and his anticipations realized, it would principally be a matter of distance, expense, and detailed survey, to say whether it would be advantageous to adopt it in preference to the valley of the Columbia River. As a mule trail it might. But having in view what I am fully convinced will be the great and ultimate object to be attained—the opening of a through line of road to the valley of the Saskatchewan River, the benefits to be derived from which it is unnecessary to enlarge upon as they must be apparent to all—I am much inclined to think, from the actual data now before me, that it will be better to follow the valley of the Columbia (from the easterly terminus of the pass from Shuswap Lake, more especially when it is taken into consideration that it will be very desirable to construct the road along such a line as will be most likely to ensure its being kept open for traffic at all seasons of the year. The adoption of this valley for a line of road will not only secure its being on a low level, as compared with the others, but it will also open up the whole of the Country contiguous to it, and afford easy access to its numerous tributary streams, particularly to the valley of the Canoe River, or as it is commonly called by miners who have prospected up the Columbia River, the North Fork of the Columbia. Men who have prospected on this river have informed me that they have washed as high as fifty cents to the pan on one of its tributaries—the "Pin River."

It is a most difficult matter to give anything like a definite opinion as to the best line to adopt for a road when the explorations are incomplete, and in that I do not feel justified in making myself to one. I should therefore recommend that the adoption of a line for the through Wagon Road be for the present postponed, until I have time to complete the surveys of the lines now only partially explored through the Selkirk Range. Had Mr. Turnbull been able to examine the valley running in an easterly direction from the head of the Upper Arrow Lake all the distance across to the Upper Columbia, and to report definitely on it, and also where it will strike that river, it would have been an easy matter to decide if it is a preferable one to that of the valley of the Columbia itself; but, in a range of mountains such as the Selkirk it is more than probable that a valley which appears large and favourable at one place, may, at a short distance, terminate abruptly, and prove useless for the desired object.

At the beginning of the present year, the great point at issue was whether a good line existed by which a road could be taken in the direction of Shuswap Lake, through the different ranges of mountains between the valley of that lake and the Rocky Mountains. That question is, I think, satisfactorily solved, and it now remains to decide which is the most favourable line to adopt. This decision can only be arrived at properly by more detailed surveys than it was possible for me to make of so extensive, rugged, and almost unknown country as that I had to explore in the short period of two and a half months, during nearly two thirds of which time we had heavy and incessant rains.

As the reports of Messrs. Turnbull and Green, which I will forward to you as soon as possible, will give detailed descriptions of the valleys explored by them, I shall merely give one of the valley of the Ille-elle-want, up which I went.

On leaving Mr. Turnbull at the mouth of this stream, I proceeded up its northerly or right bank, for a distance of about forty miles, at which point the river divides into two streams of nearly equal size, the general bearing of one valley above the forks, as far as it can be seen from that point, being north 14° east; that of the other nearly east. The latter valley was evidently the one that, judging from its general bearing, would be most likely to afford a pass in the direction wished for. I therefore tried to induce the Indians I had with me, by every possible persuasion, to accompany me all the way across the Selkirk Range, and make for Wild Horse Creek. (The Columbia River Indians would from the first only engage to go as far as the head waters of the Ille-elle-want.) All my efforts were, however, unavailing, as they affirmed that if we went on we should be caught in the snow, and never get out of the mountains. As I now found it would not be possible to complete the exploration of the easterly branch, so as to arrive at a definite conclusion as to its suitability for a line of road throughout to the Upper Columbia, and as a partial expedition would only be a waste of time and money, for should it be explored throughout at any future time, which I would recommend, the same ground would have to be traversed again, I decided to explore the northerly fork, and accordingly continued my journey, still keeping on the right-hand bank, until I reached a point about seventy miles from the mouth of the main river. The valley, which had been continually turning more and more to the north, took a decided turn at the above point, its bearing then being nearly N. W., and as the snow, which had been falling on the mountains for several days, was but a short distance above the river bottom, I concluded to return, it being quite apparent that nothing further could be gained by a longer continuance in these mountains. I therefore turned back on the 30th of September, and reached the head of the Great Shuswap Lake on the 10th of October.

At a distance of about four miles above the forks before mentioned, I entered the slate range, and continued in it the rest of the distance travelled up this stream. These slate mountains are intersected in all directions by innumerable veins of quartz, and on the river banks and bars much hard blue gravel, intermixed with clay, was seen. We hastily washed a few pans of "dirt" which we secured from the surface of some of the bars, and obtained prospects which Mr. Perry (the Mountaineer), who was with me, pronounced to be 5 cents to the pan. I examined some of the "coals" obtained through a magnifying glass, and when viewed in this manner they appeared to be thick, coarse, and with rough edges. It is my impression that good and extensive firebricks will be discovered on this stream, and that there is every probability gold-bearing quartz also exists in the slate mountains, through which it flows.

In passing a very clearly defined vein of quartz about five feet in width, I noticed traces of what I thought was silver, I therefore knocked off a few pieces of the rock, which have been assayed at the Government Assay Office here by Mr. F. G. Claudet, and he returns the following result:

Description of Mineral.	Result of Assay.		
	Argentiferous Galena,		
	Lead—79.25 per cent.	Silver—Stoers. per Ton of 20 cwt.	Gold—Traces.

The valley of this stream is heavily timbered with large sized Cedar, White Pine, Fir, Cypress, and Spruce; there is much fallen timber and underbrush, and we found it very difficult and tedious indeed to make headway through it.

I may safely say that the whole country traversed by us north of the latitude of 49° 10', and east of the longitude of the Great Shuswap Lake, is quite useless for agricultural purposes.

I remained three or four days at the head of Shuswap Lake, not being able to get a canoe on my arrival there, and availed myself of the opportunity to settle the Indian accounts for our packing, &c., and also those of the trail I had opened from this point to the Columbia River. As I found Mr. Green had already returned from Gold Creek, I set him at work to lay out some lots on the proposed town site to guide the settlers, then busily employed erecting buildings, as to the probable disposition of the streets, &c., &c., as shown on the plan forwarded to you a short time before my arrival here.

Having at last succeeded in purchasing a bark canoe, I left with two Indians to complete the exploration of the valley of the Eagle River, and at the same time sent Messrs. Green, Conran, and Perry to Kamloops, with instructions to make a survey of the Kamloops and Shuswap Lakes and River, and to take soundings, &c., &c.

As I was on the point of starting for the Eagle River, I received instructions from the Government to act as Gold Commissioner on the Columbia River, and in consequence thereof only went up the valley of the Eagle River and its tributary, to the point formerly reached by me from the Columbia, when having fully satisfied myself that an almost level line for a road can be obtained by this route from the Shuswap Lake to the Columbia River, I returned to the head of the Lake, leaving the Branch Valley, that I had originally intended to explore, from the "Lake of Three Valleys" to the Spille-en-chem River, unexplored; I remained a day at the head of the Lake recording claims and issuing Mining Certificates, and then again returned to the Columbia River, where I met Mr. Robert T. Smith, to whom I was authorized to hand over the papers, &c., belonging to the Gold Commissioner's Office, should I find that the work of my own department would render it inconvenient for me to remain on the Columbia, as this was the case, and as there was really no necessity for the presence of a Gold Commissioner after the 1st of November, I laid over the claims from the 10th of November, until the 1st of May, next, and then handed Mr. Smith the books, &c., to enable him to issue Mining Certificates, and record claims. Having discharged this duty, I returned to Shuswap Lake, and, on my way across, in anticipation of the freight that I fully expect will go over this trail next spring, if our merchants and farmers show even a fair amount of enterprise, I set men at work to build all the bridges that will be required on this road, and from last autumn, expect they are now completed.

From the date of my arrival at Shuswap Lake, until my return to New Westminster, I was occupied on business connected with the Indian Reservations on the North and Shuswap Rivers, and other work, as set forth in your instructions to me. As these are matters for a separate Report, it is unnecessary to say anything further in this one.

It may, perhaps, be superfluous for me to say anything with regard to the mines of "The Big Bend," after all that has been said and written on this subject; but as I have had the opportunity of seeing a larger section of the Country this season in their immediate vicinity than anybody else, it may not be amiss for me to state that it is my firm conviction they will prove not only very rich, but will also be found to extend over a large extent of Country and that gold-bearing quartz will be found in the slate range, which is most unquestionably the gold one. From my observations, as well as what I gather from Messrs. Turnbull and Green, this range crosses Gold Creek a short distance from its mouth, then touches the Columbia River at the mouth of Cairne's Creek, and thence bears away in a south-easterly direction, crossing the McEllephant River some forty-four miles from its mouth, and the McCon-ophur River (which falls into the head of Upper Arrow Lake,) as well as the stream which falls into the head of Kootenay Lake, and I think most probably continues on in the direction of Wild Horse Creek. This being the case, I fully anticipate that rich Gold Fields will be discovered on the head waters of all these streams and rivers, as well as those of the different streams that have their source in this range, and which, flowing in an easterly direction, fall into the Columbia.

As the reports of the yield of Gold since I left the Columbia River, have much exceeded what was the case then, a statement of the yield by me, when Gold was only beginning to be found in quantities, might give a wrong impression of what now it most probably is—as high as \$84½ to the pan (see Mr. Green's report) had been taken out on French Creek in September, reports were also current at that time, that a single pan of "dirt" had yielded \$100. On Cairne's Creek, at the same date, from \$30 to \$50 per day to the hand was not an uncommon yield with sluices.

One great advantage these diggings have over others in the Colony, is that they are not deep, and may, so far as yet substantially known, be considered as surface or "poor man's" diggings.

Now that the trail from the head of Shuswap Lake to the Columbia River is opened, it is a very easy matter to reach the mines at present known, and not expensive. This trail strikes the Columbia twelve miles above Cairne's, and twenty and a half miles below Gold Creek.

It is most important, that the work of opening trails from the terminus of this one, should be resumed as early in the spring as possible, so as to connect it with French and Cairne's Creeks, and also with the head of Steam-boat navigation at the foot of the Little Dalles.

The trail to French Creek I should have opened this autumn, as I considered my instructions were sufficient to justify such an outlay as would have been required to make it passable, but when it became at all certain that the diggings were really good, or in fact at any time after my first arrival on the Columbia, in August, it was impossible to get the necessary supplies at any price to carry on the work, and the season was so far advanced, that before they could have been procured, the winter would have set in and stopped all further work. The truth is, had it not been for the persevering energy and enterprise displayed by Messrs. Smith and Laidner, in forwarding supplies when the mines were uncertain, and the modes of conveyance most difficult, I doubt if a single miner could have remained at the diggings after the middle of September.

If the cost of labour, including food, does not exceed \$5 per day, ten thousand dollars (\$10,000) will be ample to open a good trail from French Creek to the Columbia River terminus of the present trail. Three thousand dollars (\$3,000) will open one from the latter point to Cairne's Creek, and ten trail from Cairne's Creek to the head of navigation, eight thousand dollars (\$8,000) will be ample, and for the completion of the work on the trail from Shuswap Lake to the Columbia, at the same rate of wages, two thousand five hundred (\$2,500) or three thousand dollars (\$3,000) will be all that is requisite, or in round numbers twenty-five thousand dollars (\$25,000) for these several works will be sufficient.

As it is very probable that other trails may be needed during the next summer, the necessity for which it is at present impossible to foresee, and as the cost of labor may be higher than that upon which I have based the above estimates, I would suggest that the sum of fifty thousand dollars (\$50,000) be appropriated for the purpose of opening trails in this District. I would also recommend that tools and supplies be forwarded early in the year to carry on these works, and that the system of their construction be by day labor and not by contract.

I do not think that under existing circumstances it would be at all judicious to undertake the construction of any Wagon Road in this District during the coming season, but that all available funds should be devoted to the opening of pack trails for animals, to such localities where mines of sufficient richness may be worked to justify such an outlay.

It appears to me that one of the most important works for the Government to undertake would be the opening of a good trail from the Upper Columbia through the Rocky Mountains to the extensive open country which, from the best information I have been able to gather from various sources, extends along the easterly slope of that great dividing range. There is now a very large population spread over the country south of the Boundary line, and it is rapidly increasing. With the mines of the Big Bend as an attraction, and a good trail by which animals could get over to the vicinity of those mines, large numbers of people would be certain to make their way into this Colony. In fact I am convinced that it is in this direction we have to look for the large immigration into the Colony, and not by way of the sea. If the above work could be accomplished we would not be at the mercy of steam-boat proprietors, whose interest it is and will be to take as many people as they possibly can to the different territories bordering on the Lower Columbia, and should a much smaller sum than that needed to subsidize a direct line of steamers from San Francisco to this port be expended on the above work, the benefits to the Colony would not only be much greater at present, but would be permanent and continually increasing. I feel satisfied that if a policy is adopted to foster immigration into this Colony through a channel it does not naturally seek, that it will result in failure and pecuniary loss, whereas, if advantage is taken of the very circumstances which to many appear likely to injure the Colony, or I should rather say a certain portion of it, the result will be that we shall get a much larger population, and thereby ultimately benefit the Colony at large.

As Mr. Green's Report on his return will give a description of the Shuswap River, which he has surveyed and sounded, I shall not at present touch upon that subject, but will forward his Report together with my own observations made on my return journey down that river.

In the event of the exploration I had in hand this year being continued, it is my intention that a depot of supplies should be forwarded from Wild Horse Creek to the head of the Columbia, to be in readiness for the parties that should commence exploring in an easterly direction from the head of Kootenay Lake and the mouth of the Ille-cille-wat River to the Upper Columbia, so that when they arrive at it one party could arrange to explore the country on one bank, whilst the other is similarly engaged on the other bank. Canoes should also be provided, and the explorations confined on down stream, as this method will save much time and, therefore, expense. It is quite out of the question to pack supplies for any lengthened trip across the Selkirk Mountains without a trail.

The addition of a good astronomer to the expedition would be invaluable, particularly to fix the longitudes of all important points.

With my Report on the Shuswap River, I will also forward to you the Journals, Sketch Maps, and other detailed information connected with the Expedition.

I remain, &c.,
J. W. Trutch, Esq., (Signed.) W. MOBERLY.
Chief Commissioner of Lands and Works and Surveyor General, B. C.

No. 7.—MR. MOBERLY TO CHIEF COMMISSIONER OF LANDS AND WORKS.

New Westminster, January 18th, 1866.

Sir, I enc to forward you Mr. A. H. Green's Reports and Sketches of the trail from the Head of Shuswap Lake to the Columbia River, and of that portion of the Columbia River situate between the easterly terminus of the above trail and the Mouth of Gold Creek, and also of that Creek and some of its tributaries.

I remain, &c.,
J. W. Trutch, Esq., (Signed.) W. MOBERLY.
Chief Commissioner of Lands and Works and Surveyor General, B. C.

No. 8.—MR. GREEN TO MR. MOBERLY.

Columbia River, August 2nd, 1865.

Sir, I beg to inform you that I have reached the Columbia River, and found a very good pass, over which a Mule Trail can be easily made.

I followed the Indian trail to the Columbia for a distance of about twelve or thirteen miles, and then, instead of ascending the mountain, followed the river to the head waters of one of its branches, where I found a stream called Salmon Creek, which flows into the Columbia.

The height of the "divide" is 3,800 feet above Shuswap Lake, and the distance from the lake to the Columbia I estimate at 37½ miles, though I think it could be reduced to 33.

Over the first 20 miles very good grades could be obtained, but after that the mountains rise so precipitously that it would be difficult to get any other than a Mule Trail over them.

A good gravel bottom can be obtained the whole way, with the exception of about three miles on the summit which would be wet in the spring.

The only feed for animals is on a prairie about ten miles from the lake, and on the summit where there is plenty of grass and water.

Should a trail be made this summer, two bridges with a span of sixty feet each would be required, one over the river, and the other over a branch of it.

Pine, spruce, red and white cedar, and hemlock abound, but excepting near the lake it is under the average size; the underbrush consists of the huckleberry, prickly ash, and scrub, yew and juniper.

I enclose a Sketch of the country gone through, and remain, &c.,
W. Moberly, Esq. (Signed) ASHDOWN H. GREEN.

No. 9.—MR. GREEN TO MR. MOBERLY.

The Camp, Columbia River, October 2nd, 1865.

Sir, I beg to report my return from Gold Creek. I left this Camp on the 8th September in a canoe with three Indians, and reached the mouth of Gold Creek on the 9th. The next day I proceeded up the Creek as far as the first portage where navigable water commences, but finding no canoe I went on next day to the second, where I found a canoe and a boat. Taking the canoe I proceeded to French Creek, where I laid over a day to sketch the Creek and gain any information I could with regard to the route I proposed going.

On the 19th I reached the first forks and went up the north one a day's journey, but finding the course was too much to the north concluded to return and go up the east branch. Finding our provisions were likely to run out, I put the Indians on half rations and pushed on, postponing sketching till I returned. I reached the second forks, a distance of about six miles, on the 20th, and found myself in a basin of the mountains.

The north-east fork, which is the only one in the right direction, is quite impracticable for a Wagon Road on account of the height, even if a road could be found through the canon at the mouth of the eastern branch of the first forks, which I think very unlikely. I, therefore, decided to return, and sketched my way back to the second forks, where we made a raft and came down the river to within three miles of French Creek, which we reached on the 27th.

Gold Creek enters the Columbia through a cleft in the mountains which forms a canon, but it evidently originally entered about a mile above, as there is a low pass which strikes the Creek at the second portage. At the head of the canon is the first portage, where navigable water commences, though it is rather rough up to the second. From the latter to French Creek the river runs with about a $3\frac{1}{2}$ mile current through a muddy flat, thickly covered with small willows, interspersed with small prairies and beaver meadows. The mountains on the north side of the river descend almost perpendicularly to the water; on the south they stand back from two to three miles, but I was unable to sketch them very accurately on account of fog.

A trail has been cut by the miners from French Creek to the Columbia River, but when I was there about three miles were unfinished.

On French Creek some of the men were taking out very good pay; I saw one pan of dirt washed that yielded \$34 $\frac{1}{2}$, and was informed that a previous one had given \$104.

About three miles of the river above French Creek is unfit for canoe navigation, though I think with portages and towing one might be got up. Beyond that they can go with ease to within half a mile of the first forks. The bush above French Creek is very thick, in fact so much so that once or twice we were obliged to cut our way through. On the east fork travelling is comparatively easy; the benches are thickly timbered, but as the water does not overflow the banks there is no small brush worth mentioning.

A man told me he had found very good prospects on this fork, and was going back when he could get provisions. The bed rock is mostly slate, with quartz and wash gravel. The timber comprises pine, spruce, white pine, hemlock, red and white cedar, and a little cottonwood.

Although I found no trace of any other mineral than gold in its natural state, I have no doubt that silver will be discovered before long on French Creek, as small nuggets of argentiferous galena, and also nuggets of native copper, are found in the sluice boxes almost every day in some of the claims.

I remain, &c.,
(Signed) ASHDOWN H. GREEN.

W. Moberly.

No. 10.—MR. MOBERLY TO CHIEF COMMISSIONER OF LANDS AND WORKS.

New Westminster, January 22nd, 1866.

SIR,

I enclose Mr. A. H. Green's Report and Map of the Shuswap River and Lakes, from Kamloops to Express Point, near the foot of the Great Shuswap Lake, which he surveyed and sounded.

You will see from the Report that at the time Mr. Green surveyed these waters, in the latter part of November, that the shallowest place he could find was three and a half feet in depth, but from information collected from Indians and others who have resided there during the winter, it appears that the water is much more shallow in the coldest weather, but rises again early in the spring. The water this year may probably have been higher than it is in ordinary seasons, owing to the great quantity of rain that fell during the latter portion of the summer and throughout the autumn, and if so, it is to be inferred that as a general rule the depth of water will be less at the same season of the year than Mr. Green found it to be; if this is the case, I think the best and cheapest plan to adopt in order to render the shallows navigable for Steamers in the low stages of the water, will be to have a dredger on the river to clean out channels wherever bars may form—other means, such as wing-dams, would be most expensive, and I apprehend only remove the obstruction from one part of the river to another.

J. W. Trutch, Esq.,

Chief Commissioner of Lands and Works and Surveyor General, B. C.

I remain, &c., &c.
(Signed) W. MOBERLY.

No. 11.—MR. GREEN TO MR. MOBERLY.

New Westminster, December 26th, 1865.

SIR,

I beg to report the completion of the Thompson River survey, and my return to New Westminster. I make the distance from Kamloops to the Little Shuswap Lake 87 $\frac{1}{2}$ miles by the river, the length of the little lake $4\frac{1}{2}$ miles, and the distance between the lakes 2 $\frac{1}{2}$ miles.

I have also sounded the river, and find that there will be no difficulty in taking a Steamer up on account of the depth of water, as the most shallow part of the channel is $3\frac{1}{2}$ feet deep. I am informed that the water is much lower in winter than I have mentioned, but as the river is then frozen over, no Steamer could run until it breaks up, when the water rises again. I would call attention to a rock (which I have marked on the plan) between Walker's ranch and the little lake, which although a Steamer could pass, would be very dangerous, as the stream is swift and the channel crooked. A very little work early in the spring, when the water is low, would take it out as it is not large.

I found but little ground (except where the Indian potato patches are) on the north bank of the river suitable for arable land, on account of the alkali in the soil and the absence of any water to irrigate with, but very good grazing might be had the whole way up. From the foot of the big lake to Express Point there is some good bottom land, but it is heavily timbered and liable to be flooded in places.

I enclose plan, and remain, &c., &c.,

W. Moberly, Esq.

ASHDOWN H. GREEN.

No. 12.—MR. MOBERLY TO CHIEF COMMISSIONER OF LANDS AND WORKS.

New Westminster, January 23rd, 1865.

SIR, I enclose to forward you Mr. J. Turnbull's Report, together with his Journal, Sketches, &c., &c., of the different routes explored by him during the past season, when connected with the Exploration, many of which I had charge.

As Mr. Turnbull's Report and Journal give the detailed information respecting the country to the south of the section explored by Mr. Green and myself, and as I have already given you my own opinion of the different routes as far as known it is unnecessary for me to say anything further now; it may, however, be as well to add that Mr. Turnbull's Report shows more forcibly the great necessity there is to have the Explorations (mentioned in my Report) through the Selkirk range by the head of Kootenay Lake and the south-east branch of the Illecillewaet River, as also the valley of the Columbia River, completed at as early a date as possible, in order to ascertain which will be the best line to adopt for the through line of road.

I remain, &c., &c.,
(Signed) W. MOBERLY.

J. W. Trutch, Esq.,

Chief Commissioner of Lands and Works and Surveyor General, B. C.

No. 13.—MR. TURNBULL TO MR. MOBERLY.

New Westminster, 23rd January, 1865.

SIR, In obedience to your instructions, I beg to lay before you the following Report relative to my late explorations in the neighbourhood of the Columbia and the Kootenay Districts.

In my daily Journal I have given all the information I considered necessary to explain the nature of the country through which I passed, both as regards Road making, formation of country, and agricultural resources.

On my plan, which I will furnish you with on the first opportunity, I will give all information as regards routes by which the Columbia can be gained, their altitudes, &c., and if you think it necessary, I am prepared to furnish you with sectional plans which will show you the features and geographical nature of the country. In this Report I will, therefore, confine myself wholly to general remarks, and refer you to my daily Journal for all details of my journey.

After leaving you at Kamloops, I proceeded to Captain Houghton's (Okanagan), and there made arrangements—with the assistance of Mr. Vernon—with Indians to carry my provisions, stores, &c., to the Columbia.

Leaving Captain Houghton's, I proceeded along the line of route recommended by him, examining carefully everything connected with the route, construction of trails, Roads, &c. Up to within a few miles of Cherry Creek Silver Mine, the line follows along the bottom of a beautiful wide valley, covered alternately with meadow and bunch grass, and ornamented in a most pleasing manner with groups of pine timber. This valley for 12 or 14 miles east of Captain Houghton's, is eminently adapted for other stock raising or agriculture, and offers every facility for any description of road building.

The Silver Mine is connected with the Okanagan Country by a very passable pack trail, but in the event of any horse traffic in that direction it would be necessary to expend say \$1,000 in improving the trail, cutting out logs, &c. By following the line A. B. (see plan) several extensive bridges will be avoided and the distance shortened, and I think for the above amount this route can be opened. From Captain Houghton's to point A. no improvement of the trail is necessary. After leaving the Silver Mine, the valley narrows considerably, and is bounded on either side by steep, wooded hills, and continues thus until reaching the summit at C. The rise of the valley between B. and C. is about 800 feet; there are, however, no engineering difficulties in the way of road building, more than heavy grading, cribbing, chopping, &c.

From the summit down to the Columbia at point D. the valley falls with a scarcely perceptible grade, and is wide, and in every respect favourable for any description of road. The difficulties of road making would be more chopping and grading. The valley from its summit down to the Columbia is bordered by high sloping hills, the summits of which are all thickly covered with splendid food, and wild flowers of various descriptions, the wild lupine being very numerous.

Should a pack trail or road at any time be made through this valley, it will be necessary to cut horse trails up to the summits at regulated camping grounds. In conclusion with respect to this portion of the route, viz: from Captain Houghton's to the Columbia—a good trail or wagon road can be constructed with ease, and at a very moderate expense.

Having determined in my own mind that it was quite practicable to reach the Columbia by means of the latter described route, my next duty, according to your instructions, was to examine the openings through the Selkirk range, and having built a bark canoe, I proceeded to Fort Shepherd, in order to supply myself with provisions, and procure the assistance of some Indians who knew the country, and endeavour, if possible, to get some information regarding the country. On my way down, I received such information as led me to believe that a pass did exist by way of the Illecillewaet Valley, and I at once made up my mind to explore it. I was, however, prevented from at once carrying this out in consequence of the decision of my Indians. Had I at that time been provided with good, willing Indians, I would have examined the pass to the head waters of the Columbia by the latter end of August, and I feel satisfied in my own mind that I would have been successful in proving to you that this same valley is the only one through this formidable range.

In my Journal I have described the difficulties I laboured under in getting Indians to accompany me, in it I have also described the route and country as far as I have seen, and I therefore refer you to it for further details. I may however, here state, that I feel perfectly satisfied that the valley shown on Sketch at A. springs from the same divide as Toby Creek, and that the divide

is low and will be found favourable for a Wagon Road or Mule Trail. All the Indians whom I have questioned are perfectly unanimous in this belief, and as the distance between the head of Kootenay Lake and the mouth of Toby Creek cannot be more than 40 miles at the most, and taking into consideration the distance Toby Creek runs westwards, and the large body of water emptying through the valley at A, I think you will see the necessity of continuing the exploration at the earliest opportunity.

From what I have seen of the pay dirt, &c., on the Upper Columbia, I am of opinion that gold will be found on the bars of the river separating the Upper and Lower Kootenay Lakes, and also in the banks of the river, shown on plan, emptying (from the north) into the Upper Lake. This stream heads from the same source as the east branch of the Ice-ike-want River. In the event of gold being found in the above mentioned locality, I would advise the Government to keep in mind the advantages the Americans will have in supplying the mines in this direction, from the fact of it being quite practicable for steamers to navigate for some considerable distance below the 49° Parallel to the head waters of the Upper Kootenay.

Having done all in my power in seeing and collecting information as to the routes running eastward from the head of the Kootenay Lakes, I made all haste in returning to Shepherd as route for Kamboys, in obedience with your orders. As I travelled along the trail lately constructed by Mr. Dewdney, I took all the necessary observations with the Barometer, to enable me to make sectional plans of the route, my reasons for doing so, was to enable you to compare his route with others which might be discovered during our explorations.

When I reached Osoyoos Lake, Mr. Haynes requested me to assist him in surveying some Indian Reserves on the Okanagan Lake, and thinking under the circumstances, that I was quite justified in acceding to his request, I surveyed the Reserves. In my Journal I have given full particulars on the subject, and have also given the Chief Commissioner of Lands and Works an explanatory Report on the subject. After completing the latter surveys I made all haste to New Westminster, which, by reference to my Journal you will see to be the case.

In conclusion, I beg to give the following summary of my whole observations, as regards the respective worth of the different routes, of which I am aware, running through the Gold and Selkirk ranges.

When on the summit of the divide, between Captain Houghton's and the Columbia, I had a full view of the whole of the country for miles round, and could see as on a plan, all the valleys stretching through the range in the neighbourhood. Since then, on my way up and down the Columbia, I have had a good opportunity of studying its banks, and am of opinion that the best route through (should a continuous road or trail be contemplated) will be found on examination, *viz* Okanagan; from thence along the valley of the Shuswap or Spill-o-mu-chem River (see plan) and from thence by one of the routes shown in red dotted lines to the Columbia.

A road by this route will have the advantage of good feed nearly the whole way, will be free from avalanches, heavy snow drifts, &c., and will open out a good agricultural district. In addition, a road connecting the Okanagan with the head waters of the Columbia would be of great benefit to the mines of Wild Horse, for the following reasons: should the said mines turn out such as would warrant emigration to that quarter, the present trail to that point will never answer as the highway, on account of the many high mountains it crosses over; first, the Hope mountain, which is about the lowest; next, the mountains (5,200 feet in height) between Osoyoos and Shepherd; next the Kootenay mountain, which is 6,000 feet. These mountains will be impassable until late in the season, and, so soon as the snow leaves them, the numerous creeks and rivers, as yet unbridged, will be impassable; the Kootenay meadows will be totally so. Considering, therefore, the great expense of keeping in repair and making good bridges, &c., it might be found on examination best to make one good trail which would connect the whole of the mines and would pass through the centre of the country.

With regard to the navigation of the Columbia, I will merely say that as far as I am capable of judging, all navigation stops at the Little Dalles without doubt; and that, in my opinion, it should, and possibly will, stop at the mouth of the Kootenay River, owing to a rapid there (known as the Kootenay Riffe), which is much more dangerous than any of the rapids in the Fraser, between this place and Yale.

As I am hurried in this Report, I will at any time give further information if necessary.

I have, &c.

(Signed)

J. TURNBULL.

W. Moberly, Esq.

No. 14.—CHIEF COMMISSIONER OF LANDS AND WORKS TO COLONIAL SECRETARY.
EXTRACTS FROM GENERAL REPORT.

Lands and Works Department,

New Westminster, 23rd January, 1886.

Coming now to Mr. Moberly's Report, I appreciate as a cause of general congratulation that "the first main object with which he was entrusted" by my letter of instructions, namely: "to ascertain the best line for a Wagon Road from the eastern end of Shuswap Lake to the Columbia River" has been so satisfactorily attained. The pass from the south-eastern end of Shuswap Lake by the valley of Eagle Creek to the Columbia River affords, as reported by Mr. Moberly, such easy natural grades as to be not only suitable for a Wagon Road, but adaptable with comparatively small expense even for a Railroad.

We thus have it determined, that the connection between the Columbia River and Fraser River Valleys, and down the latter to New Westminster, can be made by Wagon Road or by Railroad, whatever the circumstances of this Colony or other requirements may call for such improved means of communication.

The second point to which my instructions directed Mr. Moberly's attention was to ascertain,

should be succeed in obtaining a good line of road to the Columbia River, to continue that line in a south-easterly direction, across the Selkirk Range to the Rocky Mountains, but it will be seen from his Report, that his explorations in this direction were unfortunately arrested by the inclemency of the weather in the mountains at the approach of winter.

It had previously been ascertained by the reconnaissances of Captain Palliser and others, that no great difficulty exists to hinder the construction of a good Coach Road or Railroad from the Red River settlement, up the Valley of the Saskatchewan, and across the Rocky Mountains into the Valleys of the Upper Columbia and Kootenay Rivers in the neighbourhood of the Columbia Lakes. The connection between this last named point and that where the route by the pass explored by Mr. Moberly from the Shuswap Lake strikes the Columbia, remains yet to be determined. No doubt exists but that this connection can be effected by following round the head of the Columbia, as suggested by Mr. Moberly, but I am still hopeful that a route may be traced through by the line partly explored by Mr. Turnbull, under Mr. Moberly's direction last year, which will not only be more direct to the passes of the Rocky Mountains and the gold districts of the Upper Kootenay, but afford easy grades, without passing over any high localities.

No just opinion, however, can be formed as to the selection of the best route from the point where the line, determined by Mr. Moberly, from Shuswap Lake strikes the Columbia River to the Rocky Mountains, until it be decided by what pass these mountains can most advantageously be crossed. The Reports of Dr. Hector, of Captain Palliser's Exploring Expedition, describe the Vermilion pass as a natural Wagon Road, and state that but very little expenditure is needed to enable a wagon to travel by this route from the Kootenay Valley to that of the Saskatchewan. Indeed, all our present information seems to point to the Vermilion as the pass for which we must make, in reconnoitring for a line of Wagon Road to the eastward of the Rocky Mountains, and to this pass the route partly explored by Mr. Turnbull was directly tending at the time when his explorations were broken off.

Further surveys of this district of country seem to me most desirable, as it will certainly be of very great importance to the permanent interests of this Colony to have indubitable assurance of a route by which a continuous direct line of communication with British Settlements, east of the Rocky Mountains, can be effected from the sea-board of British Columbia. I have, therefore, earnestly to recommend that I may be authorized to continue reconnaissances to this end, as soon as the season will permit of travelling in the mountains, and that the sum of \$10,000 be appropriated for this purpose.

The subject, however, in Mr. Moberly's Report which is of more immediate interest, relates to the construction of Trails to connect Shuswap Lake with the Mining District on the Columbia River, so successfully prospected last summer. A good pack trail, 24½ miles in length, has been constructed under Mr. Moberly's direction to the Columbia River. Improvements are needed to this trail, and its continuation to French Creek will be necessary, as also branches to other creeks on which mining will doubtless be carried on to a large extent next season. With the limited knowledge existing of the features of this region, and of the points to which the attention of the mining population will be chiefly attracted, it is impossible to indicate with any degree of accuracy, the directions these trails should take, their respective lengths, or the expenditure that must be incurred in their construction. It is certain, however, that there will be great need of these trails in the early spring, and that their immediate formation will be urgently called for. It is, therefore, not practicable that due time can be allowed before they are commenced, to lay out the lines that should properly be selected for Wagon Roads or for permanent trails. I am, therefore, quite of accord with Mr. Moberly, that these works should be commenced by day's labour; that the best line that can be found in the time allowed for its selection must be temporarily adopted, and work done along it, so as to render it passable as soon as possible for pack animals. From time to time this line may be improved, unless in the meanwhile a more thorough survey shall have determined a preferable route for the permanent road.

I certainly am of opinion that the construction of a Wagon Road into this District should not be undertaken until much more is known of it than is at present ascertained. A suitable opportunity, also, should be given for a thorough reconnaissance of the country, so that should the yield of gold, and amount of population warrant the construction of a road of a permanent character, it may be laid out on a carefully chosen line.

It is impossible to form anything like an exact estimate of what may be the requirements of this District in the current year. Should a numerous population pour into it, as many are sanguine will be the case, and a large Revenue be consequently derived therefrom, increased expenditure may be called for, and deemed advisable by Government, but under present circumstances, I do not think it desirable that a larger sum than \$45,000 be named for this purpose; which will in my opinion be sufficient to provide easy access from the Shuswap Lake, to all the Mining Creeks now known to yield paying prospects.

I have, &c., &c.

JOSEPH W. TRUTCH,

Chief Commissioner of Lands and Works and Surveyor General.

The Hon. the Acting Colonial Secretary.

JOURNALS OF THE EXPLORATION.

MR. MOBBLEY'S JOURNAL.

Kamloops, Thursday, July 20th, 1865.—Dispatched Turnbull and Howman at 2 p.m. to explore line from Kamloops, viz Okanagan and Cherry Creek. Left Kamloops with whole party and supplies in two batteaux, one so leaky was obliged to abandon it and put whole party in other. Proceeded up river about 4 miles and camped on north bank. Level flats on both banks of river, with benches and mountains in back ground, and the whole covered with a fine growth of bunch grass. A few scattered and stunted red fir. Weather very hot. Current of river 3 to 3½ miles per hour.

Friday, July 21.—Started at 5 a.m. Was delayed nearly all day waiting for some of the Indians to join us. Travelled about 8 miles, and camped on south bank of river. Flats on both sides of river, with benches and mountains in back ground, the whole covered with fine growth of bunch grass, with scattered red fir. Weather very hot. Average current 3 miles per hour.

Saturday, July 22.—Started at 5 a.m. and made about 11 miles. Current just above camp very strong, and also from Tod's house to Indian gardens (Nesquim's camp) running at the rate of 5 miles per hour, the rest of this portion of river has a current of about 3 miles per hour. On north bank of river high sandy cliffs and ravines in places. On south bank extensive flats, the whole covered with bunch grass. Timber, red fir, grows more thickly than before. The land on the flats where the Indian gardens are situated, and also in the neighbourhood of Tod's house, is very good for agricultural purposes. A short distance below the Indian gardens, on the south-east bank of the river, a spur of the mountains runs out to the river, and would render more work necessary, perhaps a little blasting, in order to get waggon roads round it.

Sunday, July 23.—Left camp at 6 a.m. and travelled about 8 miles. The current from this camp to the Little Shuswap Lake is very strong, running at the rate of about 6 or 7 miles per hour, and in places the water is shallow. The Indians say that in winter it is not more than two feet in depth where they ford their horses, as shown on sketch. The bunch grass is abundant on both banks of the river, and the hills timbered with fir. A settler on the extensive flat below the Little Shuswap Lake, on the southerly bank of the river, has a good crop of barley. At the lower end of this lake the aspect of the country changes, the bunch grass almost entirely disappears, the mountains become higher and more rugged, and are covered with a thick growth of timber and brushwood. It is almost impossible to define the general bearing of the ranges of mountains which surround Little Shuswap Lake. This lake is about 4½ miles in length, and the scenery is very beautiful. The river between the Great and Little Shuswap Lakes is about two miles in length, and the current very strong. There is plenty of water for steamers at this season of the year, but in order to know what it is at low water it will be necessary to examine it in the winter. Between the two lakes, on the north-western bank, is an extensive well-timbered flat, which is a favourite wintering place for the Shuswaps—their Indian name is "Che-mouse." A short distance from the foot of the Great Shuswap Lake, on its northerly side, a large creek falls into it, which flows in a south-easterly direction from Adams Lake about four miles distant. This creek is described by the Indians as very rapid and unfit for canoe navigation. About six miles from the lower end of Great Shuswap Lake, there is an island called by the Indians "Xun-tul-qun." It is about ¼ of a mile in length, and is high and rocky. On the south-west corner I discovered traces of copper. The waters of these lakes are very clear, and whence trout, &c. descend, surround the Great Shuswap Lake. The timber on the flats and in some of the ravines attains a good size, and consists of fir, poplar, birch, cedar, a little white pine, and some vine maple. The Indians take their horses at low water along the northerly side of the Little Lake, thence over the flat between the lakes and along the bank of the Great Lake, and, turning off about 2 or 3 miles beyond "Xun-tul-qun Island," cross over the mountains, and again strike the lake at the head of the north-west arm.

Monday, July 24.—Left camp at 5.30 a.m. and travelled about 24 miles, to within 7 or 8 miles of the head of the north-west arm.

Tuesday, July 25.—Reached the Hudson's Bay Post in the morning, during a heavy storm of rain. Camped, and prepared to send a party over to the Columbia River next day. Wrote to the Surveyor General and the Colonial Secretary, and sent rough tracing of Shuswap Lakes and River to the former.

Wednesday, July 26.—Dispatched Indians with packs for the Columbia River, with all the party except Hick, under Mr. Green's charge, who I instructed to examine the line proposed by Perry for a mule trail, said to be 20 or 40 miles in length, and then to return and examine the Indian horse trail, and both banks of the Columbia River between the easterly terminal of these two lines; and if I should not then meet him on the Columbia River, to continue his explorations through the Selkirk Range. I left at 10 a.m. in a skiff with Hick and two Indians; discovered a vein supposed to contain silver and iron, about 10 miles below the Hudson's Bay Post, on the southerly shore of lake, and camped at night at the narrows called "Cum-mouse-un," which means "Come and go back again."

Thursday, July 27.—Left camp at 5 a.m. and reached the mouth of Eagle Creek at 3 p.m. Went up this stream about 7 miles and camped. This is a very fine creek, or rather river, and stern-wheel steamers can run up it a distance of 4 or 5 miles, at which point a small rapid would stop further navigation. There is a good deal of low flooded land about the mouth and banks of this stream, and the mosquitoes abound. High mountains a short distance back from the banks, covered with a thick growth of timber and undergrowth; in some places fine timber.

Friday July 28.—Left camp at 8.30 a.m. and after travelling about 8 miles found the current

so strong that I left the stiff and proceeded on foot about 6 miles, and then attended a mountain on the southerly bank of stream at a point about 15 or 16 miles from its mouth, to get a view of the valley. The main valley appeared to run north, 25° west, with a branch valley running north-east into a high range of snow-capped mountains. The whole distance travelled was covered with an almost impervious growth of small pine brush and fallen timber. Some good sized cedars, fir, and white pine. Finding there was not much chance of being able to complete the exploration of this valley at present, and as it appeared more desirable for me to see the rest of the Shuswap Lake to the south, and then get over to the Columbia River, where I proposed to establish my depot, and explore back from that river, I returned to the boat and ran down to the lake again, which we reached in the evening and camped at the second narrows, called by the Indians "Selle-moose".

Saturday, July 20.—Left camp at 5 a.m. and rowed and sailed nine miles to mouth of Selkum-moose River. No valley through the mountains to the eastward of this portion of the lake. The valley of the Spill-cum-chem appears to be large, and runs in a southerly direction from foot of lake with mountains on either side. Much low land at mouth of river. Very severe thunder storm with lightning came on as we reached the mouth of river. Having seen the most westerly part of Shuswap Lake, I started on my return, and camped about 4 miles above "Selle-moose" on easterly shore of lake.

Sunday, July 20.—Rowed up to head of north-east arm of lake. No valley to eastward of lake through the high range of mountains, which runs all the distance along that shore. Am now satisfied the only chance for a pass from the Shuswap Lake to the Columbia River, at a low level and in a direct line, is by Eagle Creek valley. Camped at "Cum-moose-na." Saw many veins of quartz with appearance of much "mineral."

Monday, July 21.—Returned to Hudson's Bay Post at head of north-west arm.

Tuesday, August 1.—Waited for return of Indians with Green's Report, and roofed house for storing supplies.

Wednesday, August 2.—Remained at Hudson's Bay Post as Indians have not yet returned.

Thursday, August 3.—Remained at Hudson's Bay Post. Indians not returned.

Friday, August 4.—Left Shuswap Lake at 1:30 a.m. Travelled until 6:30 p.m. Detained much by the Indians. Travelled about 8 miles and camped. Weather clear and hot. The first 5 miles are nearly level; soil sandy, with gravel; not much underbrush, some fallen timber, standing timber principally cedar, fir, hemlock, and some white pine, all averaging from 2 to 4 feet in diameter. Very little labour to make a road beyond clearing and grubbing, the removal of vegetable matter and rotten wood from surface necessary. Only one hill of consequence about sixth mile, which can be overcome by side hill grading.

Saturday, August 5.—Left camp at 5 a.m. and reached first crossing of stream at 11 a.m. Met Indians, and shortly afterwards Green and Perry came in, we all camped. Wrote letters to Sarreyor General, Nind, and DeNouveau, made sketch of Reserve, and notice for Green to report on the Hudson's Bay flagstaff at Shuswap Lake; got Green's Report of trail, &c. Weather clear and hot. There were several wet and boggy places on the trail crossed to-day; a good number of short easy side hills; a good deal of stony ground; more underbrush than on the first portion, timber about the same. A prairie covered with grass on the north-east side of trail, about 14 miles from first crossing of stream.

The sketch of the trail from Shuswap Lake to the Columbia River is by Mr. Green, who makes the distance about 4 miles shorter than I do.

Sunday, August 6.—Sent Mr. Green back with all the Indians for a load of provisions. Went out with Perry to explore the Indian horse trail, came to a mountain which we went up a distance of about 2 miles, at an angle from 60° to 70°, gave the line up as bad and returned to camp. Sent Oliver to Lytton with letters.

Monday, August 7.—Waited for Mr. Green and Indians; caught some fish. Rained in afternoon.

Tuesday, August 8.—Remained in camp; Mr. Green and Indians arrived in afternoon, and we

crossed 4 levels, (the ones I brought out) and travelled until 4 p.m. and camped.

Wednesday, August 9.—Left camp at 6 a.m. and travelled to second crossing, where I waited for Indians, who came in about 6 p.m. Camped on open bar. Weather clear and hot. Ground passed over to-day sandy, with vegetable mould on top; a few undulations; a good deal of underbrush; timber as before described.

Thursday, August 10.—Left camp at 6 a.m.; commenced raining in the morning and rained hard all day; laid over two hours and then travelled the rest of day and camped at the upper end of first small lake on top of mountain. For 2½ miles from camp on bar ground tolerably level; over hill good bottom for road; timber as before. At the end of the 2½ miles from last camp we crossed the third time, and almost immediately commenced rising at a tolerably good grade for 4 or 4½ miles to foot of mountain, which we ascended at a steep grade; mountain steep. A good grade can be obtained by making zigzags, and perhaps a better line by keeping further along the main valley. As we ascended the mountain the timber got smaller, and at last we only had fir, which does not grow very thickly; much underbrush, and a good many large boulders, granite

lay along lake.

Friday, August 11.—Rained hard all night, and all next day. Left camp at 10 a.m., travelled to Divide Lake; no provisions left and Indians not arrived; Perry went out and shot 4 grouse. Legs, made a rather poor supper on them. There was a considerable altitude attained to-day in the 4 or 4½ miles we travelled over; ground very wet, but with gravel bottom; a great many stones and boulders. Scattered fir, thick fir, and other underbrush in places; much very fine grass. This will be the worst portion of road to build. Height of Divide Lake (the fifth lake we came to) above Shuswap Lake, 3750 feet.

Saturday, August 12.—Left camp at 5:30 a.m. Rained hard all day; reached Columbia River about 4 p.m.; descended for about two miles along valley of creek, the bottom of which is wet, but gravel bottom; then took side hill until we reached the Columbia River, at a distance of 9 miles from Divide Lake; a good grade can be got down this hill by zigzags, or by keeping the

line side of mountain to Donald's Creek, 4 miles above our camp.

Sunday, August 13.—Indians arrived in afternoon; dried cargo, &c., &c., took latitude of camp, which is $51^{\circ} 31'$ north; regulated and put scale on Barometer, &c., &c.

Monday, August 14.—Sent Cowan back with Indians to Shuswap Lake for supplies. Disembarked Green to examine west bank of Columbia River to Gold Creek, and the route traversed by Mr. Jenkins. Worked all afternoon with Perry making a log canoe.

Tuesday, August 15.—Wrote report to Surveyor General, and letter to Hick; balanced accounts, &c., &c., worked at canoe.

Wednesday, August 16.—Completed canoe; wrote to Mr. Birch; engaged 5 broken miners to work on trail; purchased a large canoe for \$20, and 350 lbs. flour at 40 cents per lb. The Columbia River has fallen 7 feet 6 inches below high water mark. Weather clear and fine.

Thursday, August 17.—Left camp at 7.30 a.m. in canoe, with Perry and Dick; ran to Cairne's Creek in two hours; visited mines; good prospects of coarse gold; bought 350 lbs. flour at 40 cents; took 100 lbs. with us and left 250 until return; paid \$20 on account; ran about 15 miles below Cairne's Creek and camped at 6 p.m.; weather clear and finer; nearly lost our canoe and Perry in a rapid; got into Little Dalles before we knew it; Indian boy frightened; canoe turned round and nearly all went to Jericho; saw a good gap through the mountains in the direction of Spill-e-mu-chien arm of Shuswap Lake; will explore it on return from Upper Arrow Lake; also ran to the eastward. The east bank of river to within 2 miles of the upper side of the Little Dalles will make a very good and not expensive line for a Wagon Road, with the exception of about 1 or 1½ miles where some rather steep sandy hills will have to be got over; the other 1 or 1½ miles will be tolerably steep side hill cutting; the rest of river bank, a distance of 3 miles, to foot of Little Dalles is steep side hill, some rock and several ravines; fine level banks on both sides of river below Little Dalles to camp. The bank of Columbia River on west side is hilly, rocky, and a good deal cut up with runies. Both banks are thickly covered with cedar, fir, spruce, hemlock, and some white pine and birch. Barometer at Cairne's Creek 27.950, at camp 8.

Friday, August 18.—Left camp at 7 a.m.; ran about one mile down stream and came to mouth of large creek flowing from the eastward; went up it a short distance and returned to river, as I shall explore this creek on my return; saw another low valley about 1½ miles below it; one of them will probably take us to the Shuswap waters; also low valley running into Selkirk range, nearly opposite the lowest gap on the other side. The west side of river is rough, broken, and rocky, and would be bad for a road, and with exception of above two gaps there does not appear to be any chance of a pass through the mountains to westward. The east bank of river is well adapted for a road, and with exception of above gap, the others are narrow and high, with snowy mountains in back ground. A few streams and boughs, and one steep rocky bluff 300 yards long; rest level gravel benches; two small rapids, but rest of river good steam-bent navigation to Upper Arrow Lake, which is about 21 miles below Little Dalles. Very high mountains to westward of head of lake, 10 to 12,000 feet. Shot a bear. Weather clear and hot. Barometer at camp in morning 28; evening 28.04. The valley of the Columbia changes a good deal below the Little Dalles, becoming wider, with extensive flats and bars thickly timbered; the climate also appears to be much milder. We saw very few mosquitoes until we got below them, but every place where we landed, both on the banks of river and shores of Lake, were infested with swarms of them.

Saturday, August 19.—Left camp at 8 a.m. Explored a short distance up north-east arm; landed and repaired canoe, made ears, and returned and camped again on island at mouth of river. Weather hot and lazy; appearance of rain; heavy wind in night, and a little rain.

Sunday, August 20.—Remained in camp waiting for Turnbull's party, having heard from an Indian that they are on their way up. Weather very hot; mosquitoes innumerable. Four miners arrived and camped with us; told us they passed Turnbull at foot of lake, on his way up.

Monday, August 21.—Waited for Turnbull on land; mosquitoes very numerous. Sky cloudless, not any wind, hot and dry.

Tuesday, August 22.—Left camp at 7 a.m. Poled up river until 6 p.m.; camped on upper end of small island; rained hard all day; swarms of mosquitoes. Barometer on Island, Arrow Lake, in morning, 27.91; do. on Island, 12 miles from mouth of river, 28.025.

Wednesday, August 23. Barometer at camp in morning 28.10; rained hard; swarms of mosquitoes, poled against strong current; stopped at Bear Bar, nearly killed a large black bear in river; four miners camped with us.

Thursday, August 24.—Left camp at Bear Bar at 7 a.m. Barometer 28.325; poled against very strong current until 4 p.m. Met a canoe of miners from French Creek (the same whose boat of previous visit was lost below Dalles de Mort). They were inclined to give bad reports of the mines, but as they had only been there 15 or 16 days I am doubtful if they mined at all. The four miners who were going up at once stopped, and were on the point of returning, but I told them not to be discouraged but see for themselves, so they came on. Weather very fine and cool; mosquitoes more numerous than ever; camped on sand-bar with Indian family; Indian speared 10 fine salmon with hunting knife. Barometer 28.325 in evening.

Friday, August 25.—Left Camp at 8 a.m. Weather clear and cold, strong breeze from north. Barometer in morning on bar 28.40; poled against stream until 2 p.m., when we reached creek; posted notice for Turnbull, and wrote him letter which I sent down with Indian, who is to go over mountains with us in morning; carried a short distance up stream; saw a great number of large salmon, some going up and some down stream; prepared to start in morning. Barometer 28.25 in evening on creek.

Saturday, August 26.—Went a short distance up stream, found we were in wrong valley, got into canoe and went about one mile lower down stream, left our canoe and started up valley at 1 p.m. Barometer at canoe (in valley) 28.28. Travelled up valley about 2 miles, and then commenced ascending mountain, in order to get a view of country. Camped at 6 p.m. Barometer 26.51. A few drops of rain, and fine night.

Sunday, August 27.—Barometer in morning at camp 26.36. Travelled up mountain until 1 p.m.; descended. Barometer 24.70. Continued to travel until 6 p.m., when we camped, having gradually ascended along the ridge of mountain. Barometer 24.152 in evening. Windy, cold, and a little rain.

Monday, August 28.—Barometer in morning 28.03. Weather clear, cold, and windy. Traveled until 12.30 p.m., dined on ground-hogs; continually ascended. Barometer 28.45. Had a good view of valley leading to the Split-cum-chen River; after dinner began to ascend, crossed a small divide, and ascended a very high bare peak; got a good view of the valleys to Split-cum-chen River, and *via* Eagle Creek to Schik-moose; descended to valley leading down to Eagle Creek, which we followed a short distance and camped; supper ground-hogs. Barometer 28.61.

Tuesday, August 29.—Left camp at 8 a.m., cold and misty. Barometer in morning 28.61. Descended mountain until 12.15 p.m., very steep hill side all the distance along the creek followed; at foot of mountain crossed a short flat about 1 mile in width, and struck the Eagle Creek, at which place the Barometer was 28.05. Eat some dried ground-hogs, and its boots were completely worn out, and provisions exhausted. I started to explore valley to Columbia River, and reached the Lake of "Three Valleys," where I camped for the night. Barometer 28.01.

Weather fine, and clear.

Wednesday, August 30.—Left camp at 6.50 a.m. Barometer 28.01. Weather cloudy, but fine. At Lake of "Three Valleys" there are low valleys running to Columbia River, to Split-cum-chen River, and to Eagle Creek, all suitable for wagon roads. After leaving the Lake of "Three Valleys" I followed the easterly valley until I reached a point about half a mile above a small lake, some 7 miles above Lake of "Three Valleys," where I camped. Barometer 27.91 in evening. There is about 13 or 2 miles of heavy rock work and blasting along the sides of these two lakes, which would probably cost 30 or \$35,000 for an 18 feet wagon road, but by keeping on opposite sides of lakes, it is probable a good deal of the work can be avoided; some swampy ground between lakes, and a little side hill, but generally good soil. Timber: cedar, fir, white pine, birch, yew, generally of fine growth.

Thursday, August 31.—Left camp at 6.50 a.m. Barometer in morning 27.81. Weather misty and windy. Barometer on Divide (9 a.m.) 27.80, at "the Eddy" Columbia River (2.30 p.m.) 28.10. Traveled to the Columbia River, a distance of about 12 miles; the valley from the camp to the small lake passed to-day is level and the soil gravelly; along the shore of lake very steep rocky bluff, over which it will cost from 15 to \$20,000 to construct an 18 feet wagon road; from the easterly end of this lake to the Columbia River an 18 feet wagon road can be constructed for about \$500 per mile, being generally level or gentle side hill, and timbered with a remarkably fine growth of white pine, spruce, fir, &c., &c. On reaching "the Eddy" we found traces of Turnbull and Howman camped on the opposite side of the river, having lost both of their canoes and a portion of their supplies on their way up the river, their Indians had also all left them. I stopped at their camp for the night; in evening the old Indian Chief "Gregoire" paid me a long visit.

Friday, September 1.—Left camp at 9 a.m., taking Turnbull with us; Howman remained in charge of camp and stores; camped on small island about 8 miles above "Eddy." Gregoire and three Indians camped with us.

Saturday, September 2.—Left camp at 7 a.m., and camped about 1 mile above Cairne's Creek; miners in high spirits at creek; saw some very fine coarse gold.

Sunday, September 3.—Left at 7 a.m., and reached our depot in the evening, where we found Layton. Shortly after our arrival, the Indians with packs arrived from Shuswap Lake.

Monday, September 4.—Commenced to prepare Sketch map, &c., &c., rained all day; cold and raw. *Tuesday, September 5.*—Wrote letters to Surveyor General, Colonial Secretary, Nix, and Kirk; worked at Sketch map. In evening Cowen and Green arrived; received private letter from the Government, wrote answer to it. Weather cloudy and some rain; cold and raw.

Wednesday, September 6.—Worked at Sketches with Turnbull; dispatched Cowen and 2 Indians for supplies to Shuswap Lake. Seward arrived in evening, with letters from Mr. Greah and Kirk. Unable to get latitude. Weather raw and cold, with much rain; it snowed on the mountains a good deal during night.

Thursday, September 7.—Worked at Sketches with Green and Turnbull; rained hard nearly all day; could not get latitude. Weather cold and raw.

Friday, September 8.—Dispatched Green and party to examine Selkirk range via Gold Creek Valley; drafted letter to Surveyor General; not well. Rained nearly all day.

Saturday, September 9.—Sick. Rained all day.

Sunday, September 10.—Finished letter to Surveyor General; wrote to Messrs. Green and Kirk. Rained part of the day.

Monday, September 11.—Got Sketch map completed; completed arrangements to go below to Illcoille-went Creek. Rainy and windy. Two Columbia Indians came to engage for day to cartward of Columbia River.

Tuesday, September 12.—Waited for return of Indians from Shuswap Lake. Rained all day and most of the night.

Wednesday, September 13.—Waited for return of Indians from Shuswap Lake. Rained until 1 p.m.; cold and windy; rained in evening.

Thursday, September 14.—Indians arrived in afternoon; also, Cunningham and J. Black's agent. Rained all day; cold and raw; not much wind; 22 inches of snow reported on summit by Indian trail.

Friday, September 15.—Left Layton's camp in morning, with Turnbull and Perry, 3 Shuswap and 2 Columbia River Indians; the Shuswap Indians that were to have come with Turnbull, refused to go at the last moment. Stopped for twenty minutes at Cairne's Creek, and borrowed large canoe from J. Claghton, leaving him our small one; ran down to camp below "the Eddy," where we found Howman and stores all safe; met two boats with Chinese going up the river. Rained hard nearly all day, and very cold. Saw some very fine gold at Cairne's Creek, as large as nutmeg seeds, and somewhat similar.

Saturday, September 16.—Left camp in morning, and ran down to the Illcoille-went River, up which we proceeded about one mile, and stopped on a bar to dry cargo, and prepare canoe and loads for trip into the mountains; decided on spot for a bridge, should road cross river; it is just below "Big Bar," and about $\frac{1}{2}$ or $\frac{3}{4}$ a mile above mouth of Illcoille-went River, and about 800 feet

in width; it can be known by some rocks on west bank of river at waters edge. Weather misty but fine.

Sunday, September 17.—Rained hard until 10 a.m., when we started, towing the canoe and cargo up stream; reached foot of canon at 12:30, where we left canoe and a few things, and, having dined, travelled about 4½ miles, where we camped on north bank of river; it rained a little in the afternoon; banks of river thickly timbered with fir, white pine, cypress, cedar, and spruce, of large size. A wagon road from Columbia River to hill at canon can be built on good gravelly ground, timbered principally with fir, pine, and poplar; it can shoulder round hill with easy grade, and probably with little or no blasting; the rest of distance travelled to-day the road would pass over flats and along easy side hills, and would be for the most part immediately along the north bank of the river, and along the whole distance thickly timbered with above description of timber.

Monday, September 18.—Left camp at 8 a.m. and camped at 6 p.m., having travelled about 8½ miles along north bank of river, which is thickly timbered with cedar, cypress, white pine, fir, and spruce of large size, the whole distance. All the ground passed over to-day is of a very good character for a wagon road, and is generally nearly level or with easy side hill grading. Should a wagon road be built along the bank of this river, a clause respecting the removal of fallen timber from the outer edge of road will be necessary, as in places during high water (which rises to a great height in certain places) if the fallen timber, or timber which may be chopped down, is left, it may change the outer side of roadway very much. The line of road will follow close to the north bank of river, with the exception of places where bars project, and then it will generally be immediately at foot of hill which extends the whole distance. Weather clear, warm, and cloudless; a light breeze at noon; killed a porcupine.

Tuesday, September 19.—Left camp at 9 a.m. Weather clear and fine. Travelled three miles, when, being very unwell, was obliged to camp; shot a very large porcupine; bank of river thickly timbered as before, and nearly same description of ground (flats and easy side hills).

Wednesday, September 20.—Left camp at 8 a.m. Travelled until 5 p.m., and made about 8½ miles, 6 of which will be heavy side hill cuttings, and 2½ are flats and benches; it is very probable it would be better to cross to other bank of river, which can be done in many places with a span of 80 or 100 feet. The whole distance travelled to-day is thickly timbered with fir, cedar, cypress, white pine, &c., &c., of large size. The white pine is of a very superior quality. A very great quantity of fallen timber nearly the whole distance.

Thursday, September 21.—Rained hard most of night and until 11 a.m., with much wind. We then started and travelled until 4 p.m., having made about 8 miles. We passed over good flats and two benches on this section; ground gravelly, hardly any side hill cutting necessary; heavily timbered with the same description of timber as before; passed two small meadows with a very little coarse grass. We found four bark canoes *carried* by a party of Indians, who had gone to hunt in the mountains. There was a good deal of fallen timber and much brush; bill-hooks on this entire line will be most valuable in making trail or road. The mountains next to river were much lower to-day.

Friday, September 22.—Left camp at 8 a.m. Travelled about 7½ miles. Weather clear and fine. Three bad side hills, in all about 2 miles in length, were passed to-day, and a side of large boulders about 4 or 500 feet in length; also a short rocky bluff of about 150 feet; road may go above or perhaps below and avoid blasting. The mountains next to river were low and without snow, but very high snow-capped ones could be seen in the background to the southward; white pine almost disappeared to-day; and generally timber of a smaller growth than before.

Saturday, September 23.—Left camp at 8 a.m., and travelled about 8 miles. Weather clear and fine until 1 p.m., when it became cloudy, but did not rain until Sunday morning. There are about 2 to 2½ miles of steep side hill on this section, and a few rocky points, but none of any length. The rock is generally soft and easily worked; the rest of distance consists of good flats. To-day we got into the slate range, in which are innumerable quartz veins of all sizes and colors: the benches also appear to be composed of the same soil as the "blue lead" or Cariboo. Along the banks of river and on sides of benches there is grass with nettles, fern, and other weeds. This grass we met with after we had travelled about 2½ miles, and it continued throughout the whole day. Prospects on bars gave 3 cents to the pan. This, doubtless, is a very rich locality. About a ¼ of a mile from our camp the river divides into two forks; we followed the most northerly one; the other, the Indians informed me, is straighter but more rocky; they say that the head waters of these are close together. *The south-easterly fork should be examined before a road is finally determined upon.* Timber fir, cedar, yew, cypress, and spruce, of smaller growth than before.

Sunday, September 24.—Left camp at 9 a.m., and travelled about 7½ miles; most of distance over good flats; a few steep and rocky side hills; timber about as yesterday; slate and quartz veins abundant; rained a little in morning but cleared up.

Monday, September 25.—Left camp at 8 a.m.; rainy; travelled over flats for a distance of 1½ miles, with the exception of 100 feet of steep side hill, when the rain, which continued to increase, came down in torrents, and we were obliged to stop; at 4 p.m. it cleared up; timber spruce, fir, and cypress; snowed on mountains to-day.

I would strongly recommend the Government to empower the person having charge of the completion of this exploration to take up some mining tools, and two sets of light blasting tools and powder, together with provisions, say in all to the value of \$800 to the centre of slate formation, and there to issue supplies to small parties of prospectors, (no party to exceed 3 in number), so as to get the country round, for a distance of 15 or 20 miles, well prospected. I think the result of this would be the discovery of rich quartz mines, as quartz veins of all kinds abound in the slate rock, and are very easily found and traced.

Tuesday, September 26.—Left camp at 8 a.m., and travelled 7½ miles; rained incessantly nearly all day; about 5 miles of the above distance was along steep slate side hill, generally covered with thick growth of alder, brush, yew, and fern; the other 2½ miles was over good flats, timbered with good sized cedar, spruce, and fir. We crossed a fork of river about 3 miles below where we camped in evening; this fork has its source in high mountains to the north-west; ½ of a mile below camp we crossed to opposite side of stream on a snow bridge, under which the stream ran for about 200 feet without being seen; this was evidently a snow slide; the valley nearly whole distance to-day

was merely an angle between the mountains, which are on each side of stream at an angle of elevation of from 45° to 60° ; this side hill will be laid for making road along on account of snow slides, but the road when once made in slate rock (which is soft) will be good.

Wednesday, September 27.—Left camp at 5 a.m., and travelled 8½ miles. Rained all day long. Nearly the whole distance travelled from camp 10 to camp 11, was over good flats; much grass and underbrush; timber, balsam, cedar, and yew; the cedar appears to run out, at about 48 miles from mouth of stream. The general bearing of valley from camp 11, was north-west, and as we have got so far now out of our course, I have determined to give this valley up as useless for a pass through the Selkirk range; it is possible, that the other fork which branches off at camp 6, may lead more directly into the mountains; but Victor (an Indian with us who knows it) says it is also turns to the north, and after a short distance runs nearly parallel with this one. Barometer reads to-night 26.45; and it read near mouth 28.32. It is impossible to get a view of the mountains, as they are always enveloped in mist and fog; this range should be explored in the latter end of June, July, and August, or perhaps in March, April, and the early part of May, before the ice breaks up, as the explorer could travel on snow-shoes on the ice, and avoid the almost impenetrable underbrush and fallen timber with which the flats and mountain sides are covered.

One of the principal results of the exploration of this river, has been to settle definitely the direction of the slate range, (with the blue lead and quartz veins). It commences about 25 miles from the Columbia, and bears off to French Creek where the mines are now being worked, and thence in the direction of Will Horse Creek; the head waters of Cairne's Creek are also in it; and I have no doubt but that rich diggings will be found on all the creeks flowing from this range in a westerly direction, and probably, also to the eastward; but miners will have to penetrate some distance back from the Columbia, all the distance from Cairne's Creek to Will Horse Creek, as this range, does not, I think, run in any place near the Columbia River; diggings will in all probability be struck on this river (both branches); on the Ill-com-opanai River, which flows into the head of Upper Arrow Lake; on the stream which falls into the north end of Keetoway Lake; and on the head of Dowlie's Creek; all of which streams take their rise in this range. Quartz lodes of gold, I feel convinced will also be discovered in this range, as it is intersected in all places by veins of quartz of all colors, which are very easily seen and traced.

Thursday, September 28.—On getting up in the morning, we saw a large grizzly bear about ½ a mile from the camp, and immediately started after him; four shots killed him, and as we were running short of provisions his flesh was a welcome addition to our supplies, having lived for four days on bread and porcupines. (which we found in great abundance,) we therefore stopped in camp in order to cure the meat, and have a day's rest before our return journey to mouth of river. It did not rain to-day, but was cloudy with cold wind; the snow is rapidly getting lower and lower on mountain sides, and I fully anticipate snow in the valley in a few days.

Friday, September 29.—Started on return journey at 7.30 a.m., we had hardly left the camp, when a fine cariboo, about 4 years old came trotting over the prairie to us, when a shot from Victor's gun brought him down, he weighed about 4 or 500 lbs., and had a splendid pair of antlers. It was with great difficulty I got the Indians away, as he was very fat; however, after getting his skin and some of the sinews and fat, I got them off and made about 12 miles, camping at the forks below snow bridge. Weather clear and fine. Barometer in evening, at camp 27.25.

Saturday, September 30.—Left camp at 7.30 a.m., travelled hard all day, with exception of one hour for dinner; made about 14 miles; waded river continually; discovered rich vein of quartz, and some mineral supposed to be lead and silver; this vein is 3 or 4 feet in width, and runs diagonally across stream, about 3½ miles below snow bridge. Weather very clear and fine. Barometer in evening 27.40.

Sunday, October 1.—Left camp at 8 a.m.; travelled about 10 miles. Weather cloudy in morning; clear and fine in evening. Blazed trees on north bank of river, about 5 miles above forks; we crossed to south side at forks, and found good flat for 3 miles, then a short rocky bluff, and the remainder was along easy side hill to flat on which we camped, opposite to camp No. 3. Barometer in morning 27.30; in evening 27.52.

Monday, October 2.—Left camp at 8 a.m.; at 10 p.m. reached place where Indian canoes were cached; took one canoe, leaving 4 sack of flour and \$5 to pay for loan of it, (it belonged to a brother of one of my Indians). I then took the two Columbia River Indians, and all the packs, and ran down nearly to camp No. 2, sending the others by land. The water in river was a succession of rapids, falls, and riffles, and very dangerous to run. Barometer in evening 27.80. Weather clear, and very fine.

Tuesday, October 3.—Left camp at 8 a.m.; Perry and 3 Sheswap Indians travelled by land; I took other 2 Indians and provisions, blankets, &c., in canoe, and ran down to lower canon, which I reached at 10.30 a.m.; we ran 4 very bad rapids, and broke the canoe in one or two places; on reaching canon I left canoe and 4 sack of wet flour cached for Indians, and then walked across portage by Indian trail to our own canoe, in which we ran down to Columbia River, (picking up some things we had cached on our way up) and camped about 4 of a mile above the mouth of Ill-com-opanai River, on east bank of Columbia River. Weather fine and rather cold all day, with a few clouds. Barometer in morning at camp 16, 28.05; ditto, in evening, on Columbia River 28.32.

Wednesday, October 4.—Left camp at 8.30 a.m.; travelled up river to Island above Little Dalles" (the same place where I camped before with Gregoire and Columbia River Indians), where we camped. We found the river at the stage of water now, which is very low, to be very different to what it was the last time we went up it; most of the bad rapids and riffles had disappeared, and there were only three or four places above the "Little Dalles," where it is very questionable if Steamers, even with tow-lines, could get over. The weather was fine and warm, but became cloudy in evening.

Thursday, October 5.—Left camp at 8 a.m.; mined a little in morning, but became fine during the day; camped at Cairne's Creek at 5 p.m.; heard of rich strikes having been made on French Creek; saw some very heavy coarse gold of dark color, which had been taken out of the canon on Cairne's Creek. Barometer in morning 28.35, do. in evening.

Friday, October 6.—Left Cairne's Creek at 9 a.m., and towed canoe all the way up to termination of trail, which we reached at 5 p.m. Weather fine, but became cloudy in evening. Found Hick had only about two miles more to make in order to reach the Columbia River with the trail. Mr. Curby has got a house well forward at termination of trail, where ferry will probably be.

Saturday, October 7.—Paid off two Columbia River Indians, and sold a little flour and bacon to some of the Cairne's Creek miners, who were in a starving state, to enable them to hold on until trains get in with provisions. Left camp at 1 p.m., and went out about 4 miles to Hick's camp, where I stopped until Sunday morning.

Sunday, October 8.—Left Hick's camp at 11 a.m.; travelled to first Lake from Shuswap Lake, and camped at 6 p.m.; it rained hard most of the day; met 5 pack animals about 2 hours drive from Columbia River; these were the first that packed over the trail; very heavy rain during night, but weather warm and mild.

Monday, October 9.—Left camp at 8 a.m.; reached prairie about 12 miles from Shuswap Lake in evening, where we camped; purchased \$1.50 worth of supplies from man in charge of De Nuvion's cargo which is all stored at the above point and Mr. De Nuvion has a log house nearly finished.

Tuesday, October 10.—Left camp at 9 a.m.; saw Mr. Smith at prairie on way to Columbia River, with a train loaded with provisions; reached Shuswap Lake at 2 p.m.; found Mr. Ladner, who was on point of going below. Wrote to Messrs. Trutch, Birch, and Nind. Took up Hick's orders to men for wages to extent of \$281.37, and order to J. Fraser for flour \$120; gave Smith and Ladner, who had cashed above orders, draft on Chief Commissioner for \$681.37 on account of trail, and \$220 on account of Exploration party, out of which I left \$100 with Smith and Ladner for Hicks, and got \$100 for my own party; found several houses built and others in course of construction.

Wednesday, October 11.—Employed all day making up accounts, and getting lists of supplies made out by Cowen. Very foggy weather until 2 p.m.

Thursday, October 12.—Busy all day with Indian accounts; set Green and Cowen surveying shore of lake opposite town site. Weather foggy until 2 p.m.

Friday, October 13.—Paid off three Indians; settled all accounts at this place in full; gave draft to Smith and Ladner for \$696.69. Green and Perry nearly completed survey of 2 blocks of lake. Bought bark canoe for \$20.

Saturday, October 14.—Busy balancing books, &c.; got supplies ready for trip to Eagle Creek; Green and Cowen finished survey of 29 town lots. Weather mild but foggy until 2 p.m.

Sunday, October 15.—Prepared to start for Eagle Creek in morning, when Lavin's boat came in bringing me authority to act as Gold Commissioner pro. tem., and forms of licences, &c. As Lavin's boat was going down again to Kamloops, I sent Messrs. Green, Cowen, and Perry down in her; we left head of lake at 1.30 p.m., and made about 12 or 13 miles and camped. On my way to-day I was followed by one "Bernard Riley" who gave me some prospects from a new creek lately discovered by himself and partners, and which is a tributary of Gold Creek, and fills into it about 6 miles from the mouth of French Creek. Riley wished to take out licences for his partners and record claims for both self and partners, so I gave him a receipt certifying that he had paid me licence for John Huff \$5, for John Clemens \$5, for John Gallagher \$5, for James Cunningham \$5; also had paid for recording claims for the above four men and himself \$12.50. He paid me \$40; not having change I was obliged to give him the \$7.50. Wrote in evening to Messrs. Birch, Nind, and Hick, which I forwarded by Mr. Green. Sky cloudy but weather warm; no wind.

Monday, October 16.—Left camp at 4.30 a.m., and travelled 4 miles in Lavin's boat to Cam-mount-un, where got into bark canoe, in which we made about 1 mile and had to stop, being nearly swamped by wind. We started again at 9 a.m. and got about 7 miles, when we were again driven ashore by the wind and detained 2½ hours; our canoe being altogether too small, I left the greater part of supplies *cached* and managed to cross the lake and reach the small island at the mouth of Eagle Creek, where I met the Shuswap chief Nesquimilk and about 15 Indians. I camped on this island; the weather was clear and fine in the afternoon and evening. Barometer read 28.70 on island. By giving chief \$5 got promise of a larger canoe in morning.

Tuesday, October 17.—A good canoe was brought in morning but, as usual, I was obliged to give the rascally old chief Nesquimilk another \$1 before I could get her traded for my damaged one. Started at 10.30 a.m. from mouth of Eagle Creek, and made about 8 or 10 miles; good dry sandy flats on both sides of stream all the way up; bought some potatoes, fish, and wild fowl, for which I paid \$4.25, and a basket of pitch \$1.25; camped on the north side of river on a large flat of burnt land, with low mountains about 200 yards from bank of river. To-day the weather was chilly, although the sun was out most of the day, a strong breeze was blowing. Barometer in morning 28.65, in evening 28.51. Timber on banks of river, poplar, fir, and a few white pine, generally of small size; the larger timber has been burnt. North side of river the best for wagon road.

Wednesday, October 18.—Left camp at 9 a.m.; cloudy and a light breeze; travelled until 4 p.m. and made about 8 miles in a direct course, but nearly double that distance by river, which is a succession of short bends; road can be taken along north bank better than on south bank; two short points of rock, from 30 to 40 yards each but not steep, come down to bank of river, and a little blasting would be required; along the last 2 or 3 miles, where the valley of river widens very much in places—even to 3 or 4 miles—the low ground will in places probably be covered at low water, and in drawing specification care must be taken to insert clause to keep top of roadway at least 4 feet above high water mark; the soil is sandy and gravelly, and the timber a small growth of poplar, fir, and pine, with some birch and cedar; the stream gets more rapid than before, and there are many shallows; many signs of beaver, bear, and otter; innumerable dead salmon covered all the bars. It rained hard from 12 m. until 6.30 p.m. Barometer in morning 28.45, in evening 28.41. An Indian and his wife stopped at our camp and promised to return and assist us in morning as our canoe is too heavily loaded for shallow water, which he says we will get into to-morrow. It will take a good deal of time and much care to locate the line of road through the wide parts of valley, and it will very probably be found better to take it immediately along the foot of mountain.

Thursday, October 19.—Left camp at 9 a.m.; travelled until 3.30 p.m., through a heavy drizzling rain, when we reached the point where we leave the main stream, and go up a small tributary

to the eastward; arranged with an Indian family to lend me a canoe, and, also, for an Indian to help us, as the stream to-day was very rapid, and the small tributary is described as much more rapid, with many fallen trees. The north bank of river would be the best for a wagon road to build, with many fallen trees. The north bank of river would be the best for a wagon road to build, with many fallen trees. The north bank of river would be the best for a wagon road to build, with many fallen trees.

about 1½ miles below forks is a rocky bench, which may be got round with little or no blasting, or a road may even be taken over it. The banks of river to-day were much more thickly timbered, particularly with cedar and cypress, and the timber generally of a larger growth. Barometer in morning 28.38; ditto in evening 28.30. The Indians have a stationary camp here and some are always to be found at this place, except in winter. They inform me that the greatest depth of snow on the flats is not over four feet, but comes and goes very irregularly. The locality about the forks of the main river and the tributary up which I go, is called Souk-lein, or the "good land," as the mountains are some distance back from river.

Friday, October 20.—The river raised about 3 feet during the night. Left camp at 9 a.m., and proceeded about 2½ miles in direct course (probably 5 by stream), and were obliged to leave canoe and most of our things *cached*; we then proceeded on foot along the north-easterly bank of stream, about 2½ miles, and then camped. The bank travelled over by us is the best for a road, being a succession of side hills and benches; road can be level all the way. It rained hard the whole day. Barometer in morning 28.30; ditto in evening (reading taken about 65 feet above level of stream) 28.05.

Saturday, October 21.—It rained in torrents all night, and continued to rain hard the whole day. Barometer in morning 28.00; ditto at point A. 27.96; ditto at camp of previous evening, where we camped again 28.05. We left camp at 9 a.m., and reached point A. (previously explored to by me, from "the Kiddy" on Columbia River, August 29th), in 2½ hours, distance 4½ or 5 miles, and then returned to camp. Two-thirds of the above distance, along rather steep side hills (good material for road); the rest of distance along good sandy and gravel flat; the whole distance heavily timbered with cedar, cypress, fir, and a few white pine. Course about east 10° north and east.

Sunday, October 22.—It rained nearly all night, and snowed heavily on mountains. We left camp at 9 a.m., and reached canon at 12 m., having dried ourselves, we started in canoe and ran down to the Indian camp at forks, where I returned the hired canoe for which I paid \$6, and discharged the Indian, paying him \$6; we then ran down to camp No. 8, which we reached in 3½ hours. The main river and tributary had both raised very much (about 4 feet), and at this stage of water a river steamer could run all the distance we came down to-day in canoe. By building a dam near the mouth of river, I think it very probable some 20 or 25 miles of this stream might be made available for steam-boat navigation; a dam would cost a trifle, probably 3 or 4000. The Indians tell me that there is gold up the main river. The weather was clear and fine about 10 o'clock, and got cold as soon as rain commenced. Barometer in morning 28.19; ditto at forks Indian camp 28.44; ditto in evening, camps 8 and 8, 28.79.

Monday, October 23.—Left camp at 9 a.m., and ran down to Souk-mouse, where I stopped and purchased 61 worth of potatoes and, also, 7 marten skins, and 1 mink skin, for \$19; we then went on nearly to Chim-moast-un and camped. Wind so strong, I was obliged to get into an old Indian's canoe, with the larger portion of cargo, and help him to paddle, whilst my 2 Indians took my small canoe with a few things. Barometer in morning 28.79; ditto at Souk-mouse (12 m.) 28.81; ditto Shuswap Lake in evening 28.80. Weather beautifully clear, sky without a cloud. To-morrow I place my party, &c., on Gold Commissioner's account, as I return to head of Lake and Columbia in that capacity.

Tuesday, October 24.—Left camp at 9 a.m., and reached head of north-west arm at 3 p.m. Weather clear and fine, but cold. Received letters from Messrs. Birch and Trutch, in relation to Indian Reserves, &c.

Wednesday, October 25.—Remained at head of lake, to issue mining licences and record claims; wrote to Messrs. Birch, Trutch, and Nind. Weather very fine and warm.

Thursday, October 26.—Remained at head of lake, on Gold Commissioner's business; got ready to leave for the Columbia River. Weather fine.

Friday, October 27.—Left at 10 a.m., for the Columbia River; reached "the prairie" and camped. Weather dull and cold. Recorded some claims on road, and received \$13.

Saturday, October 28.—Left camp at 9 a.m., and reached stream at foot of mountain, where I camped. Weather damp and disagreeable.

Sunday, October 29.—Crossed mountain and camped 4½ miles from Columbia River. I stopped at Mr. Hick's camp and gave him instructions to build all the bridges that will be required on trail.

Monday, October 30.—Left for Columbia River at 8 a.m., leaving my camp and Indians on the mountain; on my arrival at river, saw Mr. R. T. Smith, who had already received a letter and black licences, &c., from Mr. Nind, authorizing him to act so far as the issuing of mining certificates and recording claims went; I handed Mr. Smith over all my records, accounts, blank forms, &c., &c., and the sum of \$25 I had collected, also, gave him copy of notice, to lay over the claims in the Columbia River district, from the 10th of November, until 1st May. I then returned to my camp on mountain. Snowed and rained all day long.

Tuesday, October 31.—Crossed mountain and camped with Hick. Snowed heavily all day, but very mild; 9 inches of snow on summit. Met Romano's trail.

Wednesday, November 1.—Left camp at 9 a.m., and camped at "prairie." Snowed and rained all day. Trail muddy.

Thursday, November 2.—Travelled from "the prairie" to Shuswap Lake. It rained hard all day.

Friday, November 3.—Remained at lake to get supplies and forward them to Hick; drew sketches for the two largest bridges he is to build; wrote to Messrs. Hick and R. T. Smith, and drew out of Mr. McGaid's hands \$800, received from Mr. Nind, and a parcel (unbroken) from the Lands and Works Department, said to contain \$3,000. Weather fine and clear.

November 4 to 18.—Engaged on business connected with Indian Reservations on the Shuswap and Kamloops Rivers, the details of which are given in a separate Report.

VIA GREEN'S JOURNAL

July 26.—Started from the Hudson's Bay Company Post at the head of the Great Shuswap Lake, at 11:30 a.m., with 9 pack Indians, exclusive of the chief (Nequinah) and his servant, to try and find a pass to the Columbia River low enough to make a wagon road over. Messrs. Layton, Cowen, and Perry also accompanied me, the latter as a guide. Camped at 3 p.m. as the Indians were tired, having been up the whole of the previous night dancing a war dance previous to entering a hostile country. Made about 34 miles.

Barometer 28.830 Thermometer 79° H. B. C. Post.
1.15 p.m. 28.650 " 77
3 p.m. 28.525 " 80 at camp.

July 27.—Started at 4.15 a.m., I and Perry going ahead blazing trail, while Messrs. Layton and Cowen kept with the Indians. Stopped at a prairie (of about 75 acres) at 11 a.m. for dinner; as we were packing up to start again met Mr. Laderer returning from Gold Creek *en route* the horse trail. Camped on the river at 5 p.m. at the Cache. The country gone through to-day was thickly timbered with trees of large growth, with little underwood except where swampy. The trail over which we travelled was very hilly, having been blazed out more with regard to open land than levels.

July 28.—Left camp at 4.55 a.m.; travelled 2 miles on the horse trail and then left it as we intended going up the valley of river to its source; stopped at 11 a.m. for dinner, afterwards travelled till 5.30 p.m., when we reached a level place and camped, though rather swampy. About 8 p.m. a thunder storm came on, so we had to turn out and pitch our tents.

July 29.—Thunderstorm all day, so laid over in camp.

July 30.—Started at 5.15 a.m.; crossed the river as the Indians told us the travelling was easier, though I think we should have kept on the right bank as the fallen timber was very thick, and we should only have had to cross one large stream instead of four; at 2 p.m. we re-crossed the river, and here the Indians wanted to camp as they said there was no more water before we came to the divide; as it was too early to think of camping, I made them go on till 5 o'clock when we camped near a swamp; the chief and his servant left us at dinner time to hunt for cariboo, saying he would join us next day.

July 31.—Rained early in the morning but, leaving off, we started at 8.45 a.m. The whole of the country we went over to-day was quite unfit even for a mule trail, being alternately swampy hills, precipices, and rocky slides. I now found out the Indians' object in bringing us up here; at dinner time two of them went off on a hunt, contrary to my orders, leaving their packs for the others to carry; in the evening they returned, bringing four ground-hogs they had killed; the chief also returned about dark bringing in some. Had a long talk with the chief on the consequences of disobedience, stopped the two Indians' rations, and threatened stoppage of all pay due for the next offence. As we had lost all confidence in our guide, I sent Perry up a hill (view hill on plan) to see if he could recognize the country; he returned just as it was getting dark, and reported having seen a valley that he believed connected with the valley we came up, so I determined to go up on the hill myself in the morning. On the top of the mountain there is excellent feed for animals, in fact in some places the ground was quite blue with lupines, and the grass was half way up to our knees.

August 1.—Started at 5.15 a.m. I and Perry went up to the top of view hill and saw the valley through which the trail now runs; we then descended to Divide Lake, from which the water flows into the Columbia and also into the Shuswap Lake; here we had to wait half an hour for one of our party who had lost us, and then pushed forward to try and reach the Columbia by night. For about 3 miles we travelled over an open country, very swampy, but with plenty of grass; as we descended the bush grew thicker until we reached the slope of the Columbia, where we found an open timbered country, which continued until we came to within a mile of the river, where we found a swamp, and as it was nearly dark we camped for the night.

August 2.—Started at 5.45 a.m., keeping round the swamp until we came to the end of it, and then struck the river about a mile and a quarter below Dowrie's Creek at 8 a.m.; the remainder of the day was spent in fixing the camp and making preparations for a journey over the horse trail to strike the river above Gold Creek. The width of the Columbia I measured and found it 8 chains from high water mark to ditto. The distance from Shuswap Lake to the Columbia I estimate at 37½ miles, though I think it might be reduced to 35.

August 3.—Left Columbia at 8 a.m. with Perry to explore the horse trail. Made several short cuts and improvements in our blazed line. Reached Divide Lake, where we camped.

August 4.—Sent the Indians over the way we came to return to the Hudson's Bay Company Post and fetch up more provisions, while I went with Perry to explore the valley we had previously seen. Found it to be a very good route for a mule trail, but cannot recommend it for a wagon road, though, should no other pass be found, one might be made. On reaching the intersection of the old trail, found that the Indians had already passed so camped. No supper.

August 5.—Reached the Cache at 11 a.m., and found Mr. Moberly there. Abandoned the idea of going over the horse trail as we knew it to be higher than the pass I had gone over. The Indians complained of their packs and threatened to leave, so I returned to the head of lake to try and persuade them to continue their work.

August 6.—Returned to the Hudson's Bay Company Post at the head of Shuswap Lake. Made up the packs for the Indians ready to start in the morning.

August 7.—Started the Indians at 6 a.m., but did not go myself until 8 a.m. Made about 7 miles. August 8.—Arrived at the Cache at noon, when Mr. Moberly joined us, and we went about 3 miles more.

August 9.—Reached the second crossing of river.

August 10.—Started at 6 a.m. Left Cowen with the Indians at the third crossing to go over the old trail, while Mr. Moberly and Perry accompanied me over the new trail. Reached the 1st lake, where we camped; rained hard; no tent; no grub.

August 11.—Rained hard; reached Divide Lake about 4 o'clock; Perry shot 4 marmots, which we eat "straight."

August 12.—Rained hard; arrived at camp on the Columbia.

- September 17.—Sunday. Laid over to try and dry our blankets. Rained hard all day.
- September 18.—Started again; bush so thick that I had to cut through it in places. No rain, but bush very wet. Took latitude $51^{\circ} 39' 43''$, agreeing with dead reckoning. Saw plenty of beaver, caribou, and bear sign.
- September 19.—Reached the forks of Gold Creek about 4 p.m.; threw a tree across the stream, raised a little. Camped at the forks.
- September 20.—Started up the north fork, but after going about 4 miles, found that though a good valley it bore too much to the north. The Indians inform me that the divide by this valley to the Columbia is very low; but as it would be but very little south of the Boat Encampment it lays out of our way altogether. Rained.
- September 21.—Returned to the forks. Rained hard.
- September 22.—Started up the east fork; the travelling improved, the country being open timbered land, though a little swampy, with plenty of prickly ash. Camped at 5 p.m., after making 6 miles. Finding we were likely to get short of provisions, and having no gun to get any more with, I made up about 3 days supplies, and determined to push through, and try to get to the summit. Rained.
- September 23.—Cleared whatever we did not want with us, and made a start, but after going about 2 miles came to the second forks, where I had a view of the mountain in front of me. The east fork descended from perpetual snow, and the other came in from the south; so seeing there was no chance of getting a trail through by this route, I returned to the camp we had left in the morning. Rained and snowed.
- September 24.—Sunday. Arrived at the forks about noon, and as it rained hard and we were wet through camped there.
- September 25.—Rained hard. Returned to the head of navigable water, and made a raft.
- September 26.—Came down the creek on a raft as far as we could, and camped. Rained.
- September 27.—Waited to French Creek (about 2 miles), where I heard of the strikes the miners had been making. Rained a little.
- September 28.—At French Creek, saw one pan of dirt washed that yielded $\$3\frac{1}{2}$; and was informed that one washed previously had yielded $\$10\frac{1}{2}$; saw some small nuggets of native copper and silver lead that had been taken out of the sluice boxes. Rained as usual.
- September 29.—Started from French Creek in a canoe, which we took as far as the second portage, then walked to the Columbia, arriving at 8 p.m. No rain.
- September 30.—Walked down Columbia River, the river being low we were able to keep the beach almost the whole way down. Camped at Death rapids.
- October 1.—Reached the depot camp about noon; found instructions from Mr. Moberly to survey Shuswap Lake.
- October 2.—Left what things the Indians could not pack with Kirby. Started with Mr. Layton, but only reached the road-makers' camp, as our Indians stopped behind, though for what reason I could never find out, unless to steal Kirby's whiskey.
- October 3.—Reached camp 8, about 8.30 p.m., and camped there.
- October 4.—Arrived at Shuswap Lake about dark.
- October 5.—Sent Mr. Layton off to Kamloops to see if the Theodorites had arrived with instructions to proceed to Clinton if it had not and telegraph for further orders; sent 2 Indians with him.
- October 6.—Set the Indians to work making shakes, to make sights for trigonometrical survey of lake. Bought a few supplies of Messrs. Smith and Ladner.
- October 7.—Borrowed Mr. Black's canoe for three days, and fixed sights on the lake; heavy thunderstorm in the evening.
- October 8.—Sunday. Thunderstorm in the morning; fixing sights in the afternoon.
- October 9.—Laying out a base line for survey; returned to the head of the lake in the evening.
- October 10.—Mr. Moberly arrived; making tracings, &c.
- October 11.—Writing Report on Gold Creek; making tracings, &c.
- October 12.—Surveying coast line of Shuswap Lake with sextant and tape.
- October 13.—Surveying Ogden City. Hired George Kinsop at $\$4$ a day.
- October 14.—Surveying Ogden City. G. Kinsop 3 day. Paid Metahoh (Indian) off.
- October 15.—Sunday. Numbering posts and driving them in. G. Kinsop 4 day. Started for Kamloops in Layton's boat, Mr. Moberly accompanying us in bark canoe.
- October 16.—Started before daylight. Left Mr. Moberly at junction of lakes. Reached the end of the Little Lake.
- October 17.—Met Mr. Layton with the instrument a little above Kamloops; he returned with us. Reached Kamloops.
- October 18.—Mr. Layton left for New Westminster; paid his Indians off.
- October 19.—Bought a canoe for $\$20$ of an Indian. Engaged William Elmes at $\$50$ a month as cook, &c. Bought supplies of the Hudson's Bay Company, and got ready for a start in the morning.
- October 20.—Rained all day. Walked up the river to see where I could run my lines to most advantage.
- October 21 to December 6.—Surveying Thompson River.
- December 7.—Started for New Westminster which place I reached on the 24th.

	LATITUDES.		
Camp at end of Government trail.....	51	25	37.
Mouth of Gold Creek.....	51	40	20.
1st station on Gold Creek.....	51	39	42.
2nd do. do.....	51	39	6.
Ogden City.....	51	14	43.

(Taken with small pocket sextant).

BAROMETER AND THERMOMETER READINGS.

	BAROMETER.	THERMOMETER.
Ogden City	28.60	70
Car-quahumet	27.90	52
The Cache (camp 2)	27.82	77
Camp 3	27.50	74
2d Crossing of River	27.20	63
3d " "	27.15	—
1st Lake	25.65	—
Top of hill	24.75	—
Divide Lake	24.77	—
Top of slope to Columbia	23.10	58
Columbia River	23.10	60
At same place	23.10	60
1st Camp on Columbia River	23.10	60
Head of Death Rapids	21.68	60
Ditto	21.91	65
3d Camp	21.87	70
Ditto	21.96	60
Mouth of Gold Creek	27.92	70
Ditto	27.93	74
At Horse trail	27.88	73
Columbia River	27.81	58

MR. TURNBULL'S JOURNAL.

July 20.—Left Kamloops at 1.30 p.m., accompanied by Mr. Howman, and with 7 horses packed with provisions, stores, &c., my instructions being to proceed to Captain Houghton's, there to make arrangements to procure Indians, and then start, via the Silver Mine, to the Columbia, &c., &c. Camped about 4.30 p.m. on the banks of the Thompson, about 9½ miles above Kamloops; the whole distance a perfectly level bunch grass flat. Weather fine.

July 21.—Started with pack train about 6 a.m., and camped at 4.30 p.m. on the Grande Prairie, a distance of about 20 miles. The present trail, on leaving the Thompson (about 18 miles from Kamloops) crosses over the summits of two small hills, which separate the Thompson and the Grande Prairie; these summits may be easily avoided by following the small creek near Duck's farm. A road, with the exception of 2½ miles medium side hill cutting, can be constructed at very trifling expense, as chopping, grading, &c., is of the lightest description, even for miles level bunch grass flats; the bed along the road is abundant and of first class quality; several very extensive meadows are passed on the way; the soil throughout is poor, sandy, and dry. Weather fine and cloudless.

July 22.—Started at 7 a.m., and camped at head of Okanagan Lake at 5.20 p.m. (a distance of 13 miles). After leaving the Grande Prairie, a belt of timber is struck which continues for about 1½ miles; the timber is of moderate growth, the fallen timber is also moderate, and consists entirely of pine and fir, &c. No great expense would be incurred in constructing a road—merely light chopping, with some very side hill or grading. Emerging from the green timber, Salmon River is crossed, requiring a bridge about 70 feet in length; low banks on either side, the bed of the stream gravel and boulders. After leaving the creek, the prairie country again begins; the present trail gradually ascends a gentle slope until reaching the table land, then bears straight to Okanagan, clearing three small lakes shown on plan; this portion of the route is almost a natural wagon road. Weather fine.

July 23.—Started at 9 a.m., and reached Captain Houghton's about noon, a distance of about 8 miles; level prairie country, covered with a luxuriant growth of bunch grass the whole distance; one creek to cross, the banks of which are both deep and steep; about 25 chains or side hill, in order to cross this creek with a good grade. This ravine is the only portion of route where road making is necessary, and by keeping lower down close to the small lake shown on sketch the ravine is avoided.

Weather fine.

July 24.—Delayed making arrangements with Indians to accompany me, also examining the lower part of the valley in which Captain Houghton's farm is situated; the valley is wide and bare, dotted by high sloping hills, the whole thickly covered with a most luxuriant growth of bunch grass; the hills bordering the south are thickly covered with fir, pines, &c.; the northern slopes are covered to their summits with bunch grass; the bottom is well watered and occasionally dotted with salina beds of timber, consisting of pine, cedar, silver birch, hazel, &c. This valley is eminently adapted for stock raising or farming. Near Captain Houghton's house, there is a large spring from which a stream heads (shown on sketch), and which empties into Long Lake; the water of this creek is of equal temperature summer and winter (I believe about 50°). During the day I made arrangements with the assistance of Mr. Vernon—with Indians to accompany me as far as the Columbia River, not one of them, however, would carry more than 60 lbs. which necessitated my employing almost double the number I should have done had they been Slope or Yale Indians.

July 25.—Started from Captain Houghton's at 7 a.m. and camped at the first crossing of Sumner River, a distance of about 13 miles. The trail follows the northern side of the valley described yesterday, and continues the same for about 14 miles; the soil throughout is good and well suited for agricultural purposes, being a level bottom of alternate meadow and prairie, ornamented in places with groves of excellent timber, consisting of pine, fir, and first class cedar; in places the bottom is covered with a dense growth of young deciduous trees, such as birch, hazel, cottonwood, &c.; the whole is well watered by small streams from the hills on either side, which spread in all directions in winding channels through the bottom. On the accompanying sketch I have given such information as regards the road if necessary. Weather fine.

July 26.—Started at 7 a.m. Immediately on crossing the bridge the valley becomes narrower, partaking considerably of the canon character; $\frac{3}{4}$ mile further on it again widens out and is bordered by more sloping banks. To avoid blasting and difficult road building, it will be necessary to adopt a steep grade for about 100 yards, after which there will be heavy side hill for about $\frac{3}{4}$ mile through scattered fir and thick underbrush. From the latter point the trail follows along flats, chiefly timbered and rolling occasionally; slight grading in consequence; the flats are all more or less covered with large fragments of granite rock, the debris of the mountain sides. At about $\frac{3}{4}$ miles from the valley undulating. The trail continues to rise for some distance, until reaching a rocky point about 5 $\frac{1}{2}$ miles from the last crossing of the Shuswap River, after which it descends until gaining the river bank. At about $7\frac{1}{2}$ miles opposite this point, the mountains on the north side are almost solid rock, bare of timber—the rock granite and trap. From the latter point, the valley widens out again, the river running on its northern side; the trail continues along timbered flats without meeting crossed horses and provisions, and camped on the opposite side, about $1\frac{1}{2}$ miles below the junction of Cherry Creek and the Shuswap. Travelled 8 miles. Cloudy.

July 27.—Started at 7 a.m. Emerging from a thick clump of small fir and underbrush bordering the river, the trail runs on level ground (washed gravel flats), thickly timbered with a growth of young fir for about a mile, when it crosses Cherry Creek, at this point about 60 or 70 feet wide, shallow, with gravel bottom; from the latter point, the trail gradually ascends to the summit of a continuation of timbered flats, about 200 feet above the creek; at about $5\frac{1}{2}$ miles it descends into a low cedar bottom (some of the trees being 3 feet in diameter) watered by a fine stream coming from a valley bearing northeast, and which joins Cherry Creek a short distance below (see point G.) This point may be considered the terminus of feed. From the stream the trail gradually rises to the summit of a timbered flat, partially burnt, and well covered with fallen timber. The valley here takes a southerly direction for about $\frac{3}{4}$ miles; at $1\frac{1}{2}$ miles the Silver Mine, which is situated on its southern slope, is reached. I may here state that from Captain Houghton's to the Silver Mine, the trail is excellent, with the exception of two places where striking the first crossing of the Shuswap River (see sketch at D); the timber, which is very thick, is thrown over the trail in every direction, and it is therefore very winding; by cutting a trail in anything like a straight line the distance would be much shortened. The second place is the last four miles to Cherry Creek Silver Mine; it also requires similar repairs owing to fallen timber, &c. \$1,000 expended on the trail properly would make the whole an excellent pack trail. Camped at the Silver Mine, arranging packs, &c. When I made up my packs I found out, owing to the unfitness of the Indians, that I had to leave some of my provisions behind; I left them with one of Mr. Landvoigt's men, taking his receipt for them.

July 28.—Leaving the Silver Mine about 7 a.m., I ascended about half-way up the mountain side that borders the eastern bank of the creek, as it was almost impossible to make way below, owing to the dense underbrush, thick fallen timber, &c.; by this route I was in a position at all times to command an extensive view of the surrounding country, as well as the valley below; on travelling however, was toilsome and slow, owing to the steepness of the hill side and the fallen timber, which was also tolerably thick. About $1\frac{1}{2}$ miles from the Silver Mine (see sketch) from the summit on which I was then travelling, I could plainly see the whole country stretching towards the Okanagan Valley, through which I had just travelled, and I could see that by following the valley shown on sketch, running west, that the distance would be much shortened and a road much more easily built; feed would also be more plentiful; in addition to all this, the bridging of the different creeks, viz: the Shuswap, Cherry Creek, &c., is avoided. The altitude of this valley is very little, and is well exposed at all times to the sun; the timber throughout appears scattered and light. About 2 o'clock one of the Indians gave out and refused to proceed further, causing me to distribute his pack among the rest and discharge him. About sun-down I camped at the west and south forks of Cherry Creek (see sketch at G); up to this point from the Silver Mine a road would be tolerably expensive, owing to the thickness of the timber and the steepness of the hill sides; by keeping well up the hill side the expense would not be near so great and the road would be more permanent, the side hill being more solid and not near so steep; on the whole the task would be simply a matter of heavy grading and cribbing. Day's travel about 4 miles. Weather very hot.

July 29.—Started from camp at 7 a.m., and crossed Cherry Creek a little above the junction, then commenced the ascent of the high divide which separates the east and south branches of Cherry Creek, in order that I might examine both valleys and see which was the most eligible route; from Captain Houghton's report I could not tell which of these valleys he had taken. About noon a heavy storm came on, causing me at once to camp, which I had to do regardless of want of water. Day's travel about $1\frac{1}{2}$ miles. Rain and fog.

July 30.—Started at sun-rise. Day fine and cloudless. Continued our way up the summit, about 9 o'clock came to a spring and had breakfast; started again about 10.30, travelling in many places which was toilsome owing to the steepness of the hill, and the amount of fallen bleached timber that the ridge ran in a south-east direction; about 1 p.m. I came to the first summit, and found that the ridge ran in a south-east direction, and broken up into various summits and isolated peaks, height above the sea about 3 or 4000 feet. From about 400 feet below the summit line, the range is covered with splendid feed (much superior to what is found on the Bald Mountain, Cariboo), the whole ornamented in a most pleasing manner with wild flowers of every variety and color, and with small scattered firs scattered about at almost regulated distances; in order to get to this feed bench horse trails at cramping grounds would have to be cut. Camped about 4.30 p.m. at the edge of green timber. Day's travel $3\frac{1}{2}$ miles. Storm all night.

July 31.—Rained heavily all day; mountain covered with dense fog; remained in Camp all day. *August 1.*—Started to the summit with Nashell (my guide) and Mr. Horner, my object being to sketch the surrounding country as well as get a thorough idea of the country, by questioning the Indians who accompanied me; from the summit I could plainly see Captain Houghton's, the

Okanagan, and also the valley of the Columbia; I could also see both valleys below me, and at once concluded in favour of the south branch (see sketch). The Indian, Mitchell, informed me that the low wide valley which is shown on sketch, and which runs south-west as far as the eye could reach, empties into Rock Creek; it would be easy to reach this valley by following up the Mission Creek, Okanagan. After completing my sketching I travelled down to the lower lip of the hill (see point H.) where I could trace the whole valley from its junction at G. down to within a few miles of the Columbia; the summit which is wide and thickly timbered is about 800 feet above point G; I will hereafter give the height of point G. above the sea. The only difficulty in the route is from G. to the summit, as the valley is narrow and has that rise of 800 feet, however, the matter will be merely heavy grading and cribbing; there will be no blasting whatever, or slides to cross. From H. the water runs gradually eastward and falls into the Columbia River, now distant about 30 miles; the valley itself is wide and thickly timbered, with a very gradual fall and with two small lakes near its summit (or junction with the long valley before described, leading to Rock Creek); these lakes are surrounded with a narrow belt of swamp grass. A road could be constructed *via* the east branch, and crossing over the small divide shown on sketch at head of creek at M., then lead off in the direction described on sketch with red dotted lines. The south branch however is decidedly the best, being bounded by low rolling hills besides being much lower and wider. On returning to camp I found that 2 of my Indians had returned without assigning any reason for doing so, it was with the greatest difficulty I persuaded the balance of the Indians to remain. Remained in camp filling up my sketch, &c. Weather fine.

August 2.—Started at 7.30 a.m. Leaving the summit peak on my left, I followed round the southern slope of mountain and descended to a narrow ridge, crossing which I gradually ascended the next summit on the range of about the same height as the one I had left, and about 2½ miles distant in a straight line; once on the summit, I continued on it, as it was much easier walking than below, I was also better able to sketch and examine all other valleys. About 2 p.m. camped in the valley of the east branch. Day's travel 4 miles. Weather cloudy and wet from noon.

August 3.—Started at 7.30 a.m., and began the ascent of the next summit; the north branch having cut the main range in two we had to climb a considerable height, when we gained a low summit on which we travelled for about 2 miles, then descended for some time, when we came to the base of the third and last summit; I endeavoured to persuade the Indians to keep round this last mountain, but they insisted upon keeping the summit, I therefore started again to ascend the third mountain, which I found exactly similar to the others. Camped on the summit and sketched the surrounding country, &c. Day's travel 8 miles. Weather fine.

August 4.—Started at 8 a.m.; descended on a small divide over which we passed, then over thickly timbered undulating ground for some distance; saw some farmigan on our way. Camped on a small stream about 5 p.m. Day's travel 5 miles. Weather fine.

August 5.—Started at 7 a.m., and camped at sun-down on the northern slope of the south branch of Cherry Creek valley (see plan at *); during the day's march saw a very fine cariboo. Day's travel about 12 miles.

August 6.—Started at 8 a.m.; kept along the northern slope of the south branch valley. I found the valley in every respect favourable, but very thickly timbered, which was the reason why the Indians kept me on the summit. A few miles brought me to the creek shown on sketch; this creek is wide but fordable, with pebbly bottom; after crossing it we struck an Indian trail which brought us straight to the Columbia River, thus ending Captain Houghton's route. On my sketch I have marked all the different routes by which the Columbia can be gained *via* the east and south branches of Cherry Creek. Camped at the junction of south branch pass with the Columbia; the Indians call this stream What-shan River. Day's travel 12 miles.

August 7.—Paid off all the Indians that insisted on returning; arranged with two of them to make a bark canoe for the sum of \$15; 4 Indians I persuaded to remain until I could make some arrangements to supply their place.

August 8.—Remained in camp all day seeing to the construction of the canoe, which was completed about 5.30 p.m.

August 9.—Sent back the 2 Indians employed making canoes; several Indians came to camp, tried to engage them and collect all the information I could respecting the Selkirk Range, as well as the Gold Range; found out that all the Indians including the Chief of the tribe (Gragviro), were either at the mouth of the Kootenay River or Fort Shepherd; made my mind up to proceed to the latter place, in order to provide myself with provisions, and also procure Indians. Started at Mine, as well as to see Mr. Dandney, learn his proceedings, and also procure Indians. Started at 10.30 a.m. and camped at 6.30 p.m. at the Lower Arrow Lake. As it is my intention not to sketch on my way down stream, but to wait until I return up river again, at the same time gaining an idea of its general appearance and of the formation of both its banks, especially as I have more time to sketch when returning up stream than going down, I, therefore, confine my Journal, in this instance to a brief notice of my days' progress.

August 10.—Started at 6.30 a.m. and camped at 6.30 p.m. at the mouth of the Kootenay River.

August 11. Started at 7 a.m., having engaged an Indian to manage the canoe in case of rapids; arrived at Fort Shepherd about noon.

August 12.—Making arrangements about Indians, canoe, &c. Could not succeed in procuring Indians.

August 13.—Started at 7 a.m., having had the promise of Indians who were camped higher up river. Sketched both banks on my way up, taking all the necessary bearings, notes with regard to navigation, &c., marked on my sketch. On my sketch map, I have described where openings through the Gold and Selkirk Ranges take place; at these points only is description necessary; these descriptions I shall make quite plain on the map I draw at the office on my return to New Westminster. Suffice it to say that the whole of the Columbia from Fort Shepherd to my camp, is bound on either side by precipitous rocky mountains, void entirely of any land that could be devoted to agriculture; not the least signs of gravel or clay, but merely bare rock, therefore I am of opinion there can be no gold in the banks, and if gold be found on the bars it must have been washed down from above.

August 14.—Started at 7 a.m. and camped about 5 miles up the Lower Arrow Lake, where I told off the Indians who accompanied me from Fort Shepherd; on account of its being salmon fishing time I could not persuade any Indians to accompany me; the chief Gregoire promised to do his best and bring me Indians in a few days on his way up river.

August 15.—Started at 7:30 a.m. Continued sketching the lake, formation of hills, &c., and camped on the east side of the lake.

August 16.—Started at 6 a.m. and arrived at our camp where I had left an Indian to guard the stores, &c., at 5 p.m. Sketched as before.

August 17.—The whole of the Okanagan Indians insisted on returning; I told them I could not pay them (not having any money with me) until they brought me up river as far as where Mr. Moberly was stationed; this they refused and went away without pay in a very angry manner. Before going, they had a conversation with a Columbia Indian who arrived in camp, which did a great deal of harm in my opinion. During the day I had a conversation with Gregoire, the chief, whom I asked to assist me, but I could see quite a marked change of behaviour—a sort of coolness on his part, owing, no doubt, to my not having paid the Indians—made a great many excuses about his Indians being afraid to go up river on account of the Shuswap Indians with whom they were then at war; he, however, promised to do his best and left. Remained in camp all day.

August 18.—Waited in camp all day; saw neither Indians nor chief.

August 19.—Started at 10:30 a.m., Mr. Howman managing one canoe and myself the other. Sketched and took notes. Found it a very difficult matter to make way on account of the canoe being loaded.

August 20.—One Indian arrived in camp about 5 a.m.; got him to repair our canoe which had got slightly broken the day before with snags, &c. After breakfast, started and made the upper end of Lower Arrow Lake about 11 a.m. We failed entirely in getting over the first rapids at the mouth of the river, and camped, in hopes of the appearance of Gregoire and his hunting party, part of whom made their appearance at about 5 p.m. I arranged with them to bring us up to the foot of the Upper Lake for \$10. Started with them about 5:30 p.m., and camped an hour afterwards, about 1 mile up river.

August 21.—Started at 7:45 a.m. and camped at the lower end of the Upper Arrow Lake at 4 p.m. I endeavoured to persuade several Indians to accompany me to where I should find Mr. Moberly, but failed. The river between the two lakes, is in every respect better suited for navigation than the lower one; the current averages about 2½ miles an hour, with the exception of a few places, these however, will be easy for a steamer.

August 22.—Started at 6:40 a.m. managing the canoes ourselves as before; camped on a small creek (running into the east side of the lake, about 5 miles up) on account of a strong wind and heavy rain. I here mention that this creek, known by the Indians as Kushenox River, appears to me to run a considerable distance through the Selkirk Range; the valley seems wide as far as I can see; I shall, however, make marginal remarks upon my plan with reference to it.

August 23.—Remained in camp all day on account of rain and fog. At noon, Gregoire and his Indians arrived, on their way up to the head of Upper Arrow Lake. I arranged with 4 of them to bring me to the head of the lake, promising them \$2 a day each.

August 24.—Started at 8:45 a.m., sketching the lake as I went along. Camped at 3 p.m. on account of a strong head wind, which endangered the canoes. During the afternoon, passed a canoe containing 8 miners from the Upper Columbia; all had a very poor opinion of the mines above.

August 25.—High wind blowing down the lake. Started at 10 a.m. during a lull, and reached the head of the lake about 4 p.m. Camped here with a party of miners on their way up river; tried to induce them to give us assistance up stream, as the Indians refused to go further, but failed. Paid off the Indians.

August 26.—Remained at camp, endeavouring to persuade the Indians to accompany us but failed.

August 27.—The Indians positively refused to accompany us, we therefore started ourselves about 10 a.m., with all the provisions, with the intention of getting up as far as possible, corking the provisions and one canoe, and try it with a light load; after about 2 hours hard paddling, however, the canoe took a sheer and became entangled with a tall tree which had fallen into the river, several holes were knocked in the bottom, and she at once began to fill. It being impossible to get her away from the tree, we began to unload, placing all the provisions, &c., on the tree, Mr. Howman being on the top to receive them; before we had taken the whole of the stores out she sank, leaving me hanging to the branches of the tree. Articles lost:—frying pan, camp kettle, knives and forks, plates and cups, 1 tierce, 1 blanket, 1 single axe, 1 aneroid barometer, 20 lbs. sugar, 100 lbs. bacon, 100 lbs. flour, also some papers and private things, including my hat and boots. During the afternoon, a canoe came down with 5 men from above; they informed us that they had lost one man that day in the canon above. I tried to get them to bring me up, but they refused on account of their going to Kootenay; requested them to inform the Indians below of what had happened, and desire them to come up.

August 28.—About 10 a.m. 3 canoes came up to our camp; the Indians informed us that Gregoire, their chief, would be up during the day, and would bargain with me; that in the meantime they would convey us 3 miles further up. Started with them and reached the camping ground about 1 p.m., sketching as I went. During the afternoon Gregoire made his appearance, and persuaded 4 Indians to undertake to bring us up at a most exorbitant price—viz. half my provisions. As I was entirely in their power, I was compelled to agree; there is no doubt they were paying for this arrangement from the first.

August 29.—Started at 8 a.m. and camped at 1 p.m. during a thunder storm. As I am entirely in the hands of the Indians, I have to submit wholly the length of each day's journey to them.

August 30.—Started at 7:45 a.m. and camped at 1 p.m. in consequence of receiving a letter from Mr. Moberly informing me to wait his appearance at the mouth of the creek, which he is now crossing.

August 31.—Remained in camp. About 1 p.m. Mr. Moberly, accompanied by Mr. Perry and an Indian, arrived. Mr. Moberly reported very much in favour of the route he had examined. Next

morning Mr. Moberly had made up his mind to start for his camp near Downie Creek, for the purpose of getting a new fit out for the next exploration through the Selkirk Range. His intention is to travel through the valley known by the Indians as Ille-cille-want River, which empties itself into the Columbia about 2 miles below the Little Dalles, and exactly opposite to his last exploration. I am to explore *via* the valley named Il-com-opalux, which empties itself into the east head of the Upper Arrow Lake.

September 1.—Started about 9 a.m. in canoe with Mr. Moberly and party, leaving Mr. Howman to look after the provisions and camp. I found the river to increase in rapidly as I proceeded upwards; in going through the Little Dalles we had to warp our canoe up the whole distance; in my opinion this point is decidedly the termination of steam-boat navigation; at very low water it may be navigable, but I feel confident at the best it will be very dangerous, owing to the narrowness of the channel and the different currents and boils; the channel averages about 80 feet in width. Immediately above the Dalles the river widens out, but is still much worse for steam-boat navigation; the riffles are swifter, more dangerous, and in my opinion quite impracticable for steam-boat navigation. The current in many places runs 9 and 10 miles an hour, in fact for many miles north of the Little Dalles the river averages 7 miles an hour; I am decidedly of opinion that this portion of the river is impracticable for steam-boat navigation at its present stage, and at high water it is much worse. Camped about 6 miles above the Little Dalles.

September 2.—Started at 7 a.m.; found the river as the day before; bad riffles at almost every bend; the banks much lower than the day before; called in at the mining camp on Cairne's Creek; found the miners very much satisfied with the country; saw some excellent gold which had been taken out, much superior to Cariboo gold; all seem to believe the country is rich. Gold Creek and French Creek are also reported good, good prospects having been struck in both places. Camped about 1½ miles above Cairne's Creek.

September 3.—Started about 7 a.m.; river about the same as the day before for a few miles, when it becomes more smooth and less rapid. About 6 miles above Cairne's Creek the snow peaks of the Gold Range show themselves, and fall with precipitous banks to the river. Reached the depot camp about 4 p.m., where we found Mr. Layton keeping charge of stores, &c.; about sun-down, 7 of the pack Indians made their appearance with packs from the head of Shuswap Lake, they reported Mr. Green on his way over.

September 4.—Remained in camp all day awaiting the arrival of Mr. Green; reducing my sketch to the scale of the country sketch map.

September 5.—Filling up sketch map. During the afternoon Messrs. Green and Cowen arrived.

September 6.—Remained in camp. Rain all day. Cowen and Indians started for the head of Shuswap Lake to pack over provisions for the next explorations. During the afternoon a man from Mr. Hick's party came into camp with a Sextant, &c.

September 7.—If heavy thunder storms during the morning, cleared up during the day. Made an attempt to take Latitude.

September 8.—Rain occasionally during the day. Mr. Green started for his exploration through the Selkirk Range. Took Latitude, which I found to be $51^{\circ} 25' 15''$.

September 9.—Foggy; about 12 the clouds cleared slightly off. Made an attempt to take the Latitude.

September 10.—Rain and fog. Remained in camp.

September 11 to 14.—Remained in camp. Rain continually.

September 15.—Rain and fog. The Indians having arrived from Shuswap with the supplies, I started with Mr. Moberly and party to my camp, near the Ille-cille-want; 2 of the Indians who were detailed for me refused to start, being afraid of the roughness of the season; we ran all the riffles and arrived safe at 5 p.m., at Howman's camp.

September 16.—Drizzling rain; fine about 11 a.m. Started down to the Ille-cille-want and took Latitude. Camped with Mr. Moberly, about 1 mile up the river.

September 17.—Left Mr. Moberly, and started down river accompanied by Mr. Howman, for the purpose of hiring Indians, if possible, and then start for the Il-com-opalux to the divide of the Selkirk Range; had considerable difficulty in getting down the Ille-cille-want River, on account of the narrowness of the channel and the rapidity of the current. Camped about 12 miles from the Upper Arrow Lake.

September 18.—Started about 8 a.m., and reached the upper end of the Arrow Lake about 1.30 p.m.; took Latitude. On my way down met several Indians, had a talk with the Chief's son, and made arrangements to get 4 Indians to go as far as the divide with me; rate of pay \$2.50 per diem each, and a present to their wives of 50 lbs. of flour and some bacon.

September 19.—Preparing packs, &c., till 12 o'clock; took Latitude at mouth of Columbia River, at the head of Upper Arrow Lake, after which we started. Day fine and cloudless. Camped at the mouth of the Il-com-opalux; made arrangement with a man I met here to accompany me, in order that (should the Indians fail me) he might assist me with the packs to the head waters of the Columbia.

September 20.—Started about 10 a.m., the whole country enveloped in thick fog. Travelled along the north bank of the Il-com-opalux Valley, which I found narrow at its entrance with the Upper Arrow Lake, and thickly timbered with fir and dense underbrush. A mile up, the valley gradually widens out; the creek at bottom falls with great rapidity in a succession of small water falls, owing to the steepness of the grade of the valley. Near Keshishilwa Lake it becomes almost level, the bottom broad, and thickly covered with tangled low brush. Up to this point, a good deal of side hill cutting would be necessary; one half the distance, however, the route would be over wooded flats. The timber is of moderate thickness, consisting chiefly of fir, pine, cedar, silver birch, &c., and the underbrush of young fir, hazel, dogwood, prickly mountain ash, berry bushes, &c.; the rock coverings of granite, quartzite, and slate. Road making up to this point moderate side hill and chopping; by keeping well up the northern bank of the valley all blasting is avoided and a great many long flats secured. The grade of the valley is sufficiently moderate for road making. Camped about 14 miles east of Lake Keshishilwa, having completed a distance of about

7 miles. Near Lake Kachestwa, a few valley branches off to the westward (vide sketch); the river runs both ways, emptying into the Ill-com-opalux River and the Upper Arrow Lake. In my opinion, this will be found the most eligible route when examined in detail, the divide being low and the bordering slopes lightly timbered.

September 21.—Rain and thick fog till 12:30 p.m. At 1 p.m. started, keeping the northern bank of the valley, and camped about 5 p.m. about 5 miles to the east. From the lake shown east of Kachestwa Lake the water falls eastwards to the Kootenay Lake; the valley widens also, the bottom being nearly a mile in width, and covered occasionally with good feet; the route is much more open; the timber being more scattered, and the underbrush and fallen timber less; the east of road would be very trifling.

September 22.—Started at 7 a.m. Day showery. Kept along the northern slope as before, and found the valley to increase in width and its banks more sloping; frequently passed through splendid belts of cedar and pine; at about 1½ miles the bottom is free from brush, and thickly covered with good feed but very soft and swampy, and continues the same for 2 miles; width of bottom 1 mile. From the meadow a belt of thick timber is struck, which continues to Lake de Truite. Camped on the west bank of the lake, and took latitude. Indians away hunting after a canoe which was hid somewhere on the lake.

September 23.—Fire and cloudless. The Indians not being able to find the canoe, I started on foot along the north shore of Lake de Truite; this lake (which is very deep) is about 3 miles wide and about 10 miles in length, and abounds in splendid trout. Along the north shore the bank is sloping; the timber (not heavy) consisting of cedar, fir, pine, &c.; in many places the timber is burnt off. A road can be made along this shore without any difficulty, and all blazing avoided. After satisfying myself with reference to the shore of the lake, I started up the mountain in order to get a full view of the surrounding country before bad weather set in, so as to take my future course. I gained the summit about 4 p.m., Barometer registering 23.400, and obtained a good view of the whole country in every direction; could see nothing but rough isolated peaks, covered with snow and ice; could not see towards Kootenay Lake, owing to a high peak, a short distance east, intervening.

September 24.—Travelled along the summit of ridge for about 4½ miles, sketching the features of the Selkirk Range, which was nothing but one mass of isolated snow peaks. Saw the valley below the whole time of my journey. Noticed a great many tracks in the snow of large cariboo and grizzly bear, but failed to get a glimpse of the animals. From point B. (see sketch), a lofty peak immediately north of the east end of Lake de Truite, I could see the valley for about 40 miles, and could also see the valley of Kootenay Lake, apparently almost hid by peaty snow-clad mountains. As far as I could see of Ill-com-opalux valley it was in every respect suited for any description of road or railway, it being nearly a mile wide, perfectly straight, and entirely free from rocks or canons; a moderate growth of timber being the only difficulty. From the end of Lake de Truite, a large stream falls, which the Indians inform me empties into the Kootenay Lake. This stream is very winding in its course, showing plainly the level grade. After completing my notes, I descended into the valley, striking the east end of Lake de Truite, and camped.

September 25.—Travelled along the bottom of the valley on the foot of the northern bank; timber of moderate thickness, fallen timber the same; underbrush very dense and tangled; timber consisting chiefly of cedar, fir, pine, &c.; underbrush prickly ash, birch, willow, hazel, &c.; road making hard—clumping and rolling off logs. All along the bottom of the valley the rocks (the debris of the mountains) are trap, granite, limestone, and slate. Camped about 8 miles below Lake de Truite, on account of the Indians refusing to proceed further. They endeavoured to cover their refusal on the plea of having shewn me the summit dividing the two Columbias, telling me that was their agreement and they would go no further. I explained to them that my trip was of no use without examining the summit of the valley near Kootenay Lake, then dismount about 40 or 50 miles, but to no use, they would return. I found it impossible for me to proceed without them, and fearing that Mr. Hornum would leave for Fort Shepherd on their appearing at the camp as I had instructed him, I also turned back, making up my mind to hasten on to Fort Shepherd, thence to Kootenay Lake, procure Indians and canoe or wake men, survey the lake, and examine the pass from that direction.

September 26 to 28.—Returning to camp at Lake Ill-com-opalux. Rain and storm the whole time.

September 29.—Started at 6 a.m. in canoe for Fort Shepherd. Morning clear and calm. Stopped 16 miles down; took latitude and dinner; started again at 1:30, and camped about 8 miles further on at 4:30 p.m.

September 30 to October 2.—Travelling per canoe towards Fort Shepherd.

October 3.—Started at 5 a.m. Day fine and cloudless; wind blowing greater part of the day land from the south. Took latitude at 12 o'clock, about 5 miles above the Kootenay River, and landed at Fort Shepherd about 7 a.m.

October 4.—Remained at Fort Shepherd making arrangements with Indians and Mr. Hendley for horses to take me to Kootenay Lake; sent an Indian to Sheep Creek for one of Mr. Hendley's horses. Took latitude at noon, in order to test my instrument, the distance of Fort Shepherd from the 49° Parallel being known.

October 5.—Horses could not be found. Dispatched another Indian to Sheep Creek; he returned about 4:00 p.m. with the horse.

October 6.—Packed up and ordered provisions and horses, about 11 a.m. got started and camped about 5 miles on Mr. Dewdney's trail at 4:30 p.m.; one of the horses having thrown his pack and galloped back to Fort Shepherd. The trail from Fort Shepherd to the 5 mile creek is very badly located, considerable very heavy and tortuous grades having been adopted which might have been easily avoided had the trail been carried lower.

October 7.—Lost one of the horses; sent the Indians in search of it; one brought him in about noon; the other Indian did not return to the camp until dark, having been looking for the horse all day.

October 8.—Started at 8 a.m. Met Messrs. Dewdney and Turner a few miles on the trail, and arranged with them to leave 3 horses for me at Fort Shepherd. Mr. Dewdney could not supply

me then with horses, but advised me to arrange with a Chinaman who was a few miles further on. Made the 12 mile creek about noon; about a mile further on came to the China Camp, and found the men packing up for the purpose of going for some of Mr. Dewdney's stores which had been left near Kootenay Lake; arranged with them to let me have three horses, and camped at a slough about 2 miles from Salmon River, at 4.30 p.m. The trail from the 5 mile creek to the slough is very well made, several very heavy grades night, however, have been easily avoided.

October 9.—Horses stayed this morning, feed being very scarce; was unable to start before 10.15 a.m.; about noon forded the Salmon River, quite sufficient for horses to do, even at its present low stage; when the water is high it will be impossible to ford it, and bridging cannot be done until the water is very low. From Salmon River the trail ascends a steady steep grade to the summit; about 3 miles from the summit the trail is very swampy and unfit for safe horse travel. Camped with Mr. Howell's party about 2 miles from the summit.

October 10.—Started at 8 a.m. The trail to the summit is very steep and swampy, in fact almost impossible in places; the summit is like a house-top; immediately it is gained you descend with a very steep grade (the height I found to be 6,200 feet); for the first 6 miles eastward of the summit the trail is very bad—one continuous mud hole, which must be contended before it is practicable for horse traffic. Camped at the 6 mile creek about 4 p.m., having only completed a distance of about 8 miles. From the summit to my camp, the fall is upwards of 3,000 feet. The feed at the camping ground is almost worthless.

October 11.—Started at 7 a.m.; found the trail still very bad in places, owing to the want of corduroying. Camped at the edge of Kootenay Lake about 4 p.m., and found abundance of good feed. The greatest portion of the trail from Kootenay Lake to about 5 miles west of the summit will be quite impassable next summer; it must be contended before it is practicable for horse traffic.

October 12.—Started at 8.30 a.m. and reached the Ferry at 11 a.m. The last 1½ miles must be entirely under high water mark. Took Latitude at noon. Tried to make arrangements with Indians to accompany me to head of Kootenay Lake, but failed.

October 13.—Engaged 2 canoes and 4 Indians to take me to the north end of Kootenay Lake; 1 canoe and 2 Indians came about noon; the other 2 would not carry out their agreement. I therefore started with the one canoe, leaving Mr. Howman at the Ferry. When I reached the foot of the lake I fell in with some Indians, and engaged 2 of them to go with me. I now camped and dispatched them after Mr. Howman; I was very anxious that he should accompany me, as I expected I might be compelled to divide my party.

October 14.—Mr. Howman arrived in camp about 9 a.m., and, being myself ready, I started up the lake, sketching and examining both its sides. Took latitude at 12. I noticed several very low openings (which I shall explain more fully on plan) in the banks of the lake, particularly to the westward, some of them I have no doubt fall into the Kootenay River. Camped at 5 p.m.

October 15.—Started at 8 a.m. and made to a point situated opposite to the Kootenay River. Took latitude at this point, and feel assured that a good pass exists to the eastward of the lake, which would strike somewhere about St. Mary's Creek (see plan), and there being only about 250 feet of a fall between Kootenay Lake and the Columbia River, and the Kootenay River being a very large stream, I am confident that by proper and rigid exploration a route must be found to cross along this valley; it is quite natural to suppose the valley must be wide, having so large a river running through it; there may be a few canoes, but there can be no great engineering difficulties to contend with. For further explanation respecting this route see remarks on plan. Having completed the observation for Latitude I again started, and camped about 5 p.m., completing a distance of about 28 miles.

October 16.—Started at 7.40 a.m., passed two low valleys on the east side of the lake, and one on the west side having a large stream running down it; stopped at noon to take Latitude, and gained the north end of the Lower Kootenay Lake about 4 p.m.; near the north of the lake I saw several very low passes, which I am of opinion lead to the Columbia Lake.

October 17.—Started at 7.45 a.m. up the stream which empties into the north end of Kootenay Lake; this stream is very large, and at high water must be quite navigable for river steam-boats; at present it is swift and shallow. Took Latitude at noon. About 6 miles north I came to where the Ill-com-opalux stream empties from Lake de Traite and joins the north Kootenay River; this stream is very large, and will be navigable for some distance up at high water. Two miles above the junction I camped, having come to the point where Kimbaskit crosses the range towards the Columbia River. North Kootenay River is very winding, and divided into numerous sloughs and channels; it averages upwards of 4 chains wide.

October 18.—Rain and fog. One of the Indians being sick, I started with the other 2 and canoe up stream, in order to explore still further north; about 6 miles north, I came to a large lake, averaging about 1½ miles wide, with steep precipitous banks to the east, and sloping to the west; I continued on the lake for about 6 miles, but not having provisions or blankets I returned to camp, with the intention of exploring the lake the next day. When the Indians pointed me out the route adopted by Kimbaskit, I at once condemned it, as it crosses over a high bare summit, about 6,500 feet in height; to the north however, I could see a wide low valley extending to the eastward and parallel to Kimbaskit's trail; this valley is thickly wooded and, therefore, for that reason was not followed by the Indians; the Indians informed me it led to the head waters of Baby Creek (see plan). In order to see whether it extended as I expected, I determined to climb on Mr. Howman next morning with half my Indians and provisions, and explore the summit of Kimbaskit's trail, keeping in view the valley below, which I have described, and, also, from the summit to report on the valleys near the head of the Lower Kootenay Lake. On my own part I determined to explore the Upper Lake, sketch it, and see what valleys were towards the north; and, also, examine the Ill-com-opalux Valley, where it joined the North Kootenay. My object in coming to the head of the Kootenay Lake was to examine this pass of Kimbaskit's; and, therefore, I made my arrangements both with regard to Indians and provisions to that effect; when I say that Kimbaskit's was a failure, and that other routes existed, I had very little time to spare, and, finally as the winter had actually set in, and knowing the difficulties I had to contend with in getting down the lake with our frail canoes, as well as the crossing of the Kootenay summit,

Sheep Creek summit, &c., &c.; also the want of provisions, and seeing the Indians were determined to return, having once shown me the summit of Kinabaski's trail (such being the name of their agreement), I had no other alternative but to divide my party and determine at once (in 4 days) whether any pass did exist between the head of the Upper Kootenay Lake and the Lower; having done this at once return to Fort Shepherd.

October 19.—Morning rain and foggy, snow on the mountains. Waited until about noon undetermined whether to at once return and give up the expedition or proceed; at noon I made up my mind to start, notwithstanding the weather; started at 1 p.m. with two Indians, Mr. Howman also starting with the other two for the summit of Kinabaski's trail; rode up the river which divides the Upper and Lower Kootenays, and camped about dusk, about 5 miles from the head of Upper Lake. I had an idea that this lake was much larger; on my way up lake, I saw a grizzly bear; one of the Indians fired at it but missed it. This Upper Lake is similar to all the other lakes; nothing of importance to state about it, more than a road can be easily constructed along its banks if necessary. I may here state that the river which divides the Upper and Lower Lake is quite practicable for river steam-boats at ordinary medium stage of water; navigation, however, would be extremely dangerous, owing to the sharp curves of the river.

October 20.—Stormy and heavy rain. About 10 a.m. started to explore the head of the lake, and found that two large streams run into it, one from the north, which is the largest of the two, and must come somewhere from the divide which supplies Culne's Creek, Ille-cille-want, now being explored by Mr. Moberly, and the north Ill-com-opelux Valley (see sketch at the head of the Ill-com-opelux river, Upper Arrow Lake). From what I have seen of the pay dirt on the Columbia, I am of opinion that gold may be found in paying quantities on this stream, as well as on the bars of the river dividing Upper and Lower Kootenay Lakes. I had neither time nor opportunities to examine the matter; to have done so with any degree of accuracy I should have to stay there for 5 or 6 days. Taking one of the Indians with me, I ascended a small summit which separates the north and east branches, in order to see up both valleys. From this summit I could see up the north-west valley for a considerable distance; 6 or 7 miles up it turns nearly west, and was hidden from me by high rocky mountains. The east branch, the one I was most anxious to examine, bore east by north a few miles, then turned and led straight to the eastward as far as I could see, a distance of about 12 miles; this valley was low and in every respect favourable for a trail or road; I saw further than it was possible for me to walk over, owing to the want of provisions, &c. Got back to the head of the lake by dusk and camped.

October 21.—Still stormy and wet; during the night the rivers at the head of the lake rose about 6 feet. Started about 10 a.m., very much against the wish of the Indians who were afraid of their canoes, and put ashore at point A. (see plan), leaving the Indians with canoes, I ascended the small plateau shown on sketch at A. for the purpose of examining the valley of the Ill-com-opelux. From this summit I could see that the valley was exactly the same as I have described while exploring about Lake de Traite (see September 25) only much wider, and if anything more favourable; it is undoubtedly the lowest and best I have seen in the whole country—it may be termed the Valley of the Kootenay. Having satisfied myself that the valley was what I had at first considered it to be, I returned to camp, and, the wind having slightly abated, I started down stream. When I got to the Upper Kootenay River, I found that it had risen about 6 feet, and was quite navigable for river steam-boats as far as current and depth were concerned, but navigation would be extremely dangerous owing to the sharp bends of the river. The Ill-com-opelux stream was also, at its junction with the Kootenay, quite navigable for steam-boats. At high stage of water, steam-boats can run from the "Line" to the head of the Upper Kootenay Lake. From Lake de Traite to the junction I have just described, I am told is quite navigable for bark canoes, therefore should a party be sent to further explore or survey in this direction, it will be quite simple for them to build bark canoes on Lake de Traite, and convey their provisions to the Kootenay. At the junction of the Ill-com-opelux with the Kootenay, I met Mr. Howman who described to me the valleys running eastwards as follows:—On attaining the summit of Kinabaski's trail, an altitude of about 6,000 feet, he observed a still higher range of snow-capped mountains running in a northerly and southerly direction, but cut through by three large and apparently low valleys, with large streams running through them. The first valley runs into the river about 2 miles north of the upper end of the Kootenay Lake, and about opposite to the pass from the head of the Upper Arrow Lake; the valley appeared to be very low, and, unless blocked by the summit range of mountains, would run for some considerable distance in an easterly direction. The second valley runs into the river about 7 miles from the lake; for about 5 miles it takes a north-easterly course, then, turning more to the eastward, it passes through the mountains before mentioned; this valley also appears low, and, from the fact of a very large stream running down it, must run in for some distance. The third valley runs into the head of the Upper Kootenay Lake, described by me as the east branch; he was unable to see how far this extended, but, from the formation of the mountains in its immediate neighbourhood, and also as a large stream runs through it, he was of opinion that the stream must run nearly through the range, and, from its position, must be almost opposite the head waters of Toby Creek. He would have extended his explorations still further had it been possible for him to have done so, but having only 4 days' provisions with him, and the absence of water on the mountains, he was unable to do so. The weather was very much against observing, owing to the snow storms passing over the mountains, making it difficult to see but a very short distance; during a lull in the storm he was able to see the large valley running in from the Ill-com-opelux before explored by me; he estimated the width of the valley at about 2 miles. Kinabaski, the chief, who is nearly always encountered about the head waters of the Columbia, has made a horse trail from the mouth of Toby Creek, which continues along its bottom for 2 days' journey, then he follows a foot trail which passes over the summit traversed by Mr. Howman, and reaches the Kootenay Lakes in 2 days more, thus making 4 days to complete the journey. I have questioned a great many Indians who know this route, and they all agree as to Toby Creek being a very large, long and low valley, and as the whole distance between the mouth of Toby Creek and the Kootenay Lake-trail exceed 40 miles, I am of opinion that one of the three last described valleys must lead to the head waters of Toby Creek. The two northern creeks appear to me

the most formidable, and must extend a considerable distance eastward, as they are low for at least 10 miles and with no appearance of termination; the divide, therefore, cannot be high by any of the rules, as the distance to the head waters of Toby Creek is not more than 20 miles. I feel satisfied from what I have seen of the range, and from what I have gathered from Indian information, that these valleys are low—if not as low as I expect, they are undoubtedly the forest in the more south of the Valley Maccluerant, now being explored by Mr. Moberly. I have an idea that the pass now being explored by Mr. Moberly may lead to the head of the Upper Kootenay, take rise the north-west branch, which I have described before. I am extremely sorry, however, that I have been prevented from at once determining the matter, but the lateness of the season, want of provisions and assistance, &c., has rendered the matter entirely out of my power; with reference to the locality, I will make some further remarks or report if necessary.

October 22.—Having made up my mind to return direct to Fort Shepherd; started about 8.45 a.m. and proceeded down stream, making the head of the lake about 9.45 a.m., and camped about 4.30 p.m. on west bank of lake.

October 23.—Started about 7 a.m.; proceeded down lake; had to put ashore on several occasions on account of strong wind, &c.; was nearly swamped at one time endeavouring to round a rocky point, but saved owing to the care and coolness of the Indians.

October 24.—Started at 7 a.m., but was obliged to camp at noon owing to wind and sea.

October 25.—Remained in camp all day on account of strong wind and sea.

October 26.—Started before day-light during a lull and made the Kootenay Ferry before noon; made arrangements for proceeding to Fort Shepherd.

October 27.—Started with the Hudson's Bay Company train, but camped early where the trail leaves the valley.

October 28.—Started about 8 a.m., and camped about 5 p.m., about 2 miles east of the summit. The mud holes were considerably improved with the frost, but, were nevertheless, very dangerous for horses.

October 29.—Started about 8 a.m., and camped at the 12 mile House; had considerable difficulty in getting off the summit on account of the ice, &c., which owing to the steepness of the grade was extremely dangerous for horses; had to take Mr. Meile's trail several times.

October 30.—Started at 9 a.m., and arrived at Fort Shepherd about noon; snow all the time during the march; had difficulty in getting over the steep zigzags near Fort Shepherd; found Mr. O'neilly at Shepherd. Mr. Jane informed me that one of the horses left by Mr. Pendney for me had strayed away; sent an Indian to hunt him up, and stabled the other two, which I found very small and poor.

October 31.—Remained at Fort Shepherd settling up the accounts, &c.; horse not found. *November 1.*—Horse brought in about 4 p.m.; made up my mind to start next morning with Hudson's Bay Company train.

November 2.—Started at 10 a.m. with the Hudson's Bay Company train, packing the 2 horses left by Mr. Dewdney, having made arrangements with Mr. Hardisty to supply me with a horse for Mr. Hoffman, none of the horses left for me being fit to carry him. Camped about sun-down. I may here state that I took readings with the Aneroid sufficient to make a sectional plan of the country if necessary.

November 3.—Started at 8 a.m., and camped at 4.30 p.m. During the day I took readings with the Barometer at high altitudes, &c.

November 4 to 6.—Travelling to Osoyoos Lake.

November 7.—Started at 7 a.m., and reached Osoyoos Lake at noon. Saw Mr. Haynes, who enquired if my orders would allow of me laying out some Reserves on the Okanagan Lake; as it was according to my orders to proceed by Okanagan, I saw no reason to refuse, particularly as Mr. Haynes informed me that he must have a Surveyor before the work could be done; I was told also by some men that Mr. Green had been seen chaining near Kamloops; and that Mr. Moberly was Acting Gold Commissioner on French Creek; therefore, supposing Mr. Green to have completed his chaining, I thought it my duty to remain and assist Mr. Haynes.

November 8.—Remained at Osoyoos Lake, having promised to wait a day or two for Mr. Haynes owing to the illness of his constable Mr. Lowe.

November 9 and 10.—Remained at Osoyoos Lake.

November 11.—Started about 12.30 p.m., Mr. Haynes having found me a horse for Mr. Hoffman to ride; owing to the illness of Mr. Lowe, Mr. Haynes could not accompany me; he promised to overtake me at the lower end of the lake, where the first Reserve was to be laid out; my orders were to wait his appearance. Camped 10 miles up the valley of the Okanagan. During the whole way with plenty of excellent feed for animals.

November 12.—Started about 7.30 a.m. Day wet and foggy. Followed along the banks of the Okanagan River for about 2 miles, then branching off to left followed a trail passing through alternate woodland and prairie, which kept west of the first tier of low rocky hills which borders the Okanagan Valley; this trail is much better than the one immediately through the valley, as it has to round several very bad side hills and rocky points. Struck the Okanagan Valley again about 2 miles from the head of the last small lake (shown on sketch), about 4 miles south of the Great Okanagan. Camped near the head of the said small lake. The whole of this route travelled to-day is good enough for ordinary pack trail traffic, with abundance of first class grass feed. Day's travel about 23 miles.

November 13.—Started about 8 a.m. and camped about half way between the Small Lake and the Okanagan, where the trail is shown on plan crossing the Okanagan River, that being the site of the first Reserve.

November 14.—Remained in camp all day, awaiting the appearance of Mr. Haynes, who arrived about dusk.

November 15.—Examined, with the Indians and Mr. Haynes, the country between the lakes, and selected the site of Reserve as pointed out to us by the Indians. I may here state that this land is, in my opinion, about the best in the country, both for stock raising or for cultivation, the soil being

good and the place well sheltered from storms. I am informed that very little snow falls here in winter.

November 16.—Surveyed out the reserve. No. of acres 842.

November 17.—Remained in camp, Mr. Haynes horses having gone back to Osoyoos Lake.

November 18.—Snow and sleet. Remained in camp.

November 19.—Started at 11 a.m. with Mr. Haynes along the east bank of the Okanogan. Camped about 15 miles up the lake.

November 20.—This portion of the trail is good enough for ordinary traffic.

November 20.—Started at 9 a.m. and camped at 4.30 p.m. about $\frac{1}{2}$ miles south of the Mission. The trail leaves the lake at my last night's camp, and crosses over a rocky spur of the mountain, which slopes to the waters edge; the present grade is very harassing and the trail of the very worst description. This portion (a distance of about 10 miles) should be altered and brought round the foot of the hill; by a little care and exploration an easy pass could be found.

November 21.—Horses strayed away to-day; searched for them in all directions; they were brought in at last by an Indian whom I had in search of them. About 1 p.m. started, and camped at the mission, the whole of the distance ($4\frac{1}{2}$ miles) over level flat; several mud holes before coming to the Mission Creek.

November 22.—Started about 10 a.m. and travelled along the trail *via* the chain of lakes shown on plan to the eastward of the Okanogan Lake; this route is an excellent one, being level bunch grass flats. Camped at the head of the small lake near the Railway. Day's travel 15 miles.

November 23.—Started about 10 a.m. and reached Captain Houghton's about a little after noon, Mr. Haynes arranging with the Indians about the reserve.

November 24.—Made plans of the reserves I had laid out at south of lake, Mr. Haynes arranging with the Indians.

November 25.—Started about 10 a.m., accompanied by Mr. Haynes and Captain Houghton, to the arm of lake shown on sketch, where Mr. Haynes determined on reserving; examined the locality which is an excellent patch of level ground of about 1,500 acres in extent, and spoke to the Indians with reference to it; we found them very discontented with the locality.

November 26.—Mr. Haynes again negotiated with the Indians until late, and ended by giving up the idea of reserving the arm, the Indians wishing the land at head of lake and also a portion shown on 10 mile map about 6 miles below the lake.

November 27.—Started at 8 a.m. and camped at the head of the lake; travelled round with Mr. Haynes and the Indians and laid out one reserve of 1,500 acres a little south of the head of the lake, on the west bank.

November 28.—Surveyed a second reserve at the head of the lake of 1,100 acres. This should I think, have been made a Government reserve when both Indians and white men would have an equal right to it. I am confident the Indians will object to the whites wintering cattle or grazing there, which will be a pity as it is about the best unoccupied land in the country in that direction; had this portion been unreserved it would have been farmed years ago; I have known several men who would have taken it up.

November 29.—Started for New Westminster, arriving there on the 12th December.

TABLE OF LATITUDES AND APPROXIMATE LONGITUDES.

COLUMBIA RIVER.

	Latitude N. ° ' "	Longitude W. ° ' "
Dezot Camp	51 25 15	118 35 00
Illecillewaet River	50 58 48	118 26 00
Slough above Upper Arrow Lake	50 44 17	118 15 00
Head of Upper Arrow Lake	50 40 20	118 9 00
West end of Lake de Truite	50 38 35	117 45 10
14 miles S. of Illecillewaet River	50 26 18	118 8 20
About $\frac{1}{2}$ miles N. of the foot of Upper Arrow Lake	50 11 20	118 6 50
East end of Captain Houghton's route	49 50 20	118 15 40
East bank of Lower Arrow Lake (centre of do)	49 33 35	118 12 50
Lower Arrow Lake, $\frac{1}{2}$ miles W. of Kootenay River	49 19 52	117 45 00
Fort Shepherd	49 1 20	117 36 20

WILD HORSE CREEK ROUTE.

Kootenay Ferry	49 10 36	116 35 30
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KOOTENAY LAKE.

About 10 miles N. of Kootenay Ferry	49 19 58	116 40 00
2 miles N. of Kootenay River	49 38 52	116 52 00
10 miles S. of head of Lake	50 1 17	116 50 50
West end of Kinbasket's trail	50 13 18	116 55 50

J. TURNBULL

TABLE OF APPROXIMATE ALTITUDES ABOVE THE SEA.

ROUTE TO OKANAGAN.		Feet.
Trailheads		812
The Summit, 5 miles from the Thompson River		1746
Four miles west of the Grande Prairie		2614
Grande Prairie		1450
Salmon River crossing		1274
Okanagan Lake (head)		1038
ROUTE TO CHERRY CREEK.		
1st crossing of Shuswap River		956
2nd Do.		1131
Cherry Creek Silver Mine		1745
Do. at east and south branches		2580
The Summit (estimated)		3380
The Columbia at end of Captain Houghton's route		1094
Eddy camp, 2 miles S. of Little Dalles, Columbia River		1210
Kashesilwa Lake		2320
Fort Shepherd		596
WILD HORSE CREEK ROUTE.		
Creek, 5 miles from Shepherd		1586
12 mile House		1610
3 miles east of Salmon River crossing		3000
2 miles below Do. (at slough)		1726
2 miles west of Kootenay summit		4816
The Summit		6200
Crossing of Creek, 6 miles east of Summit		3616
Cayoosh Creek		2419
Kootenay Ferry		1274
Kootenay Lake		1260
On trail, at junction of Salmon River and the Ford }		1892
2' Orville		

TRAIL BETWEEN FORT SHEPHERD AND OSOYOOS LAKE.	
Sheep Creek Mountain	4260
Do. Valley	1750
Summit between Sheep Creek and Christiana Lake	4600
Christiana Lake	903
Inch-wain-toa River crossing	1318
Summit between Inch-wain-toa and Boundary Creek	4028
Boundary Creek	1840
Rock Creek	1900
Osoyoos Lake	795
Okanagan Lake (at Mission)	1108

J. TURNBULL.

BAROMETER READINGS.

ON TRAIL FROM HEAD OF N.W. ARM, SHUSWAP LAKE, TO COLUMBIA.

Hudson's Bay Post, Shuswap Lake	28.31
1st crossing, large creek, 11 miles from lake	27.78
2nd crossing, on bar, 19 miles	27.33
3rd crossing, 21½ miles	27.15
1st small lake, 26 miles	25.45
Do.	25.38
Divide Lake, 30 miles	24.28
Do.	24.18
Columbia River, 40 miles, at camp	27.80

ON COLUMBIA RIVER, FROM DEPOT CAMP TO ISLAND, HEAD OF UPPER ARROW RIVER.

At mouth of Cairne's Creek	27.93
1 mile below Little Dalles	28.00
Island at upper end of Arrow Lake	28.04

ON TRIP FROM THE EDDY, COLUMBIA RIVER, TO THE EAGLE CREEK.

At the Eddy	28.53
Point where truck the Eagle Creek	28.05
Lake of Three Valleys	28.01
Camp, 2nd Lake above Lake of Three Valleys	27.93
Do. Do.	27.84
2nd Lake Do. Do.	27.83
On Divide	27.80
In Eddy	28.10

COLUMBIA RIVER EXPLORATION, 1865.

ON TRIP INTO SINKER MOUNTAINS, VIA MEX-CILLE-WAUT RIVER.	
Depot Camp	28.03
The Eddy	28.23
Do.	28.28
1 mile up Mē-cille-waut River	28.32
Do.	28.42
5½ Do.	28.25
14 Do.	28.15
17 Do.	28.05
Do.	27.91
21 Do.	27.80
25½ Do.	27.65
Do.	27.90
33 Do.	27.85
Do.	27.94
40½ Do.	27.65
Do.	27.60
Do.	27.50
48 Do.	(at slate ledge) 27.35
Do.	27.25
53½ Do.	27.15
55½ Do.	27.05
Do.	26.90
57 Do.	26.92
Do.	26.90
64 Do.	26.55
64½ Do.	(snow bridge) 26.55
Do.	26.60
72 Do.	26.45
Do.	26.65
Do.	26.70
Do.	26.75
At first forks on return	27.75
Camp 14	27.40
Do.	27.30
Do. 15	27.32
At Indian grave cache	27.72
Camp 16	27.80
On bank of Columbin River ¼ of a mile above mouth of Mē-cille-waut	28.38
Cairne's Creek	28.33

ON TRIP FROM SHECK-MOUSE UP EAGLE RIVER AND TRIBUTARY TO POINT A.

Island at mouth of Eagle Creek	28.70
Do.	28.64
8 or 10 miles from mouth, camp 3	28.51
Do.	28.43
15 or 16 miles (direct course) camp 4	28.41
Do.	28.33
20 Do.	28.30
Do.	28.30
25 Do.	28.05
Do.	28.05
Do.	28.19
Do.	28.00
30 Do. Point A. (the point before reached from Col. R.)	27.95
Forks of Eagle Creek and tributary	28.44
Camps 3 and 8	28.79
Do.	28.79
Sawswap Lake	28.81
Do.	28.80

W. Moberly.

NEW WESTMINSTER:

PRINTED AT THE GOVERNMENT PRINTING OFFICE.
1866.

BRITISH COLUMBIA.

COLUMBIA RIVER
EXPLORATION,

1866.

REPORTS AND JOURNALS

RELATING TO THE

GOVERNMENT EXPLORATION

OF THE COUNTRY LYING

BETWEEN THE SHUSWAP AND OKANAGAN LAKES AND THE
ROCKY MOUNTAINS.



VICTORIA, B. C.,

PRINTED AT THE GOVERNMENT PRINTING OFFICE.

COLUMBIA RIVER EXPLORATION, 1866.

No. 1.—MR. MOBERLY TO CHIEF COMMISSIONER OF LANDS AND WORKS.

New Westminster,
November 15th, 1866.

SIR,—In accordance with your letter of instructions, dated March 26th, 1866, directing me "to repair to Seymour by the first opportunity, for the purpose of resuming the duties of exploration and construction of trails in the Columbia River District, &c., &c.," I left New Westminster on the 28th of the same month, with the party appointed to accompany me, and proceeded without delay to the foot of Little Shuswap Lake, inspecting the Savona's Ferry Waggon Road and other public works on my way up. At this point my party was detained for a short time, the lake still being covered with ice. On the return of the boat that brought most of my party up from Kamloops, to which place she had returned for another load, we started for Seymour; but on reaching a point about 15 miles below that town, we were again obliged to stop, as the N. W. arm of the Great Shuswap Lake was completely blocked up with ice. After the delay of a few days I, however, succeeded in hiring two canoes with which we broke a passage through the ice, and reached Seymour on the 19th of April. On my arrival there, I found we had started much too early in the season, as the snow was still deep in the woods, even in the vicinity of the Shuswap Lake. I at once took steps to obtain the best and earliest information from the Columbia River, in order to ascertain when I would be able to commence operations on the trail from Kirby's Landing to French Creek.

On the 24th of April, I sent Mr. Hick out on the trail with a party to complete the two bridges left unfinished the previous year, and at the same time instructed him to increase his party and put in the necessary corduroys as soon as it would be possible to get to work. At that time, owing to the snow, it would have been a waste of money to attempt to put them in. The rest of my party, with the exception of Mr. Layton, I employed on the survey of the town site at Seymour.

A portion of the supplies contracted for by you to be delivered at Seymour for my use having arrived, I endeavoured to make arrangements to have them packed to the Columbia, but found that the few white men and Indians then at Seymour, willing to pack, asked such exorbitant rates that it was quite out of the question to employ them; I therefore sent Mr. Layton back to Lytton to employ a gang of Indians by the month, to pack for me between Shuswap Lake and the Columbia River.

Having completed the survey of the town site on the 3rd of May, I left with the rest of my party on the 4th, at noon, and reached the Columbia on the 9th, at 9 a.m., having laid over a day (Sunday) at the 21 mile house, to rest the men that were packing my supplies and instruments. Mr. Turnbull took the latitude of this point, which he made $51^{\circ} 23' 45''$ N. We found there was but little snow on the trail from Seymour to a point about six miles from it, but from that point the snow extended all the distance to the Columbia River, varying from two to four feet on the low ground, and on the mountain from six to fifteen feet.

The day after I reached Kirby's Landing, on the Columbia River, I sent Messrs. Howell and Perry down to the pass, viz Eagle River, explored by me last year, with orders to cross the divide and ascertain if there was any snow on it. They crossed that divide on the 12th of May, and reported that there was not then any snow on it, and that it was their opinion it had disappeared there at least a month before their arrival.

The day after sending off Messrs. Howell and Perry, I left, with Mr. Turnbull, to locate a line for a trail from Kirby's Landing to French Creek. We were employed on this work until the 21st of May, on which date we returned to La Poile (the steamboat landing at the present head of navigation on the Columbia

River); and on the 24th I commenced the work of opening a trail along the above line, with a party of about thirty men, under Mr. Howell as foreman.

Prior to this, I had been urgently pressed on all sides to clear away the snow on the trail between Shuswap Lake and the Columbia River, to enable pack animals to get across. Representations and reports were made to me, and circulated, of the wildest description, in order to induce me to undertake this work. Having satisfied myself that "the rush" into the mines of French and McCulloch Creeks had, from various causes, been brought about several months too early in the year, and foreseeing the disastrous effect the reaction would have on the revenue of the country, I considered it my duty to curtail the expenditure as much as possible, and, therefore, decided not to clear away the snow, which work would then have necessarily required a very large outlay of money, without any corresponding advantage either to the merchants, the miners, or the Government.

It was always my endeavour to limit the expenditure on the different public works, of which I had charge, to such a sum that, together with all the expenses of the Gold Commissioners and other public officers in the Columbia and Kootenay Districts, it should not exceed the local revenue of the whole district.

I was well aware of the hopes placed by the merchants and others on these mines, and the position in which many of them stood at that time, and their natural anxiety to participate in what they thought was a good trade, and which they were afraid was then being monopolized by the Colville merchants, into whose hands they imagined all the gold then supposed to be coming out of these mines was going. It was quite true there was then a large demand for provisions and tools at the mines, but it was almost entirely by men who had neither money, claims, nor credit, and who, even if they did remain there, would not in all probability be able to reap a return for their labour until the end of August. For the above reasons, Colville merchants who had goods at La Porte then would not forward them to the mines; and others who had large supplies ready to ship from Colville, by the steamer Forty-nine, delayed forwarding until they saw a probability of getting some money from the men they might give credit to. I feel satisfied that had the parties who were most pressing to have the snow cleared away been as well acquainted with the true state of affairs at the mines as I was, they never would have asked for that work.

Such was the state of affairs on the Columbia River, during the month of May and the early part of June; and hundreds of men who had hurried up to the mines without either money or supplies, were forced to leave for Colville or Shuswap Lake, without even striking a blow with a pick at the mines, and carrying with them the gloomy accounts that are generally so freely given by disappointed gold-seekers.

The hot weather and heavy rains we had during the time I was occupied in laying out and commencing the work on the trail between Kirby's Landing and French Creek, caused the snow on the trail between Seymour and the Columbia River to melt rapidly. I therefore left the road party working on French Creek trail, on the 25th of May, and returned to examine the snow on that mountain, and also to see how Mr. Hick was getting on with his work on the trail. I found he had the trail put in order to a point about 12 miles from the Columbia. I also found the snow had melted away very much since I last passed over it; and, as I received, on my way to Mr. Hick's camp, authority to expend a further sum on this trail, I next day commenced cutting a road through the snow, with a party of about seventy men. The men employed on this work nearly all got snow blind, and the work was from that cause much delayed, and rendered more expensive than it would otherwise have been. I, however, managed to get the first trail, with a load of my goods, over to the Columbia River, on the 13th June. It was some days after this that others began to bring goods over. By this time, those who had been most urgent to have the work undertaken had learnt the true state of things at the mines, and knew if they did take their supplies in that they had little chance to sell them, unless they did so on credit.

Having seen the above work in full operation, I returned to the road party on the French Creek trail, and put on another party at the upper end of it. I then had a town laid out at French Creek, a plan and report of which I forwarded to you last June; and immediately afterwards returned again to Layton's camp, where I met you on the 6th June.

On my return to the Columbia River, I sent Mr. Turnbull to locate a line for a road through the Eagle Pass. As his Report, &c., which I have already forwarded to you, more than bears out the description of this pass given in my Report last year, it is unnecessary for me to revert to it.

From the 12th to the 22nd of June, I was continually engaged on the different trails, completing and closing the work, discharging the men, and forwarding supplies stores to the Columbia River. On the last date, the valley of the Columbia River, in the neighbourhood of Kirby's Landing, was visited by a very severe storm, which filled the trail for several miles with one mass of fallen timber, com-

pletely cutting off all communication by pack animals, between Seymour, La Porte, and the mines. I was, therefore, obliged to employ a number of fresh hands to clear the trails, which I had again open for traffic by the 6th of July. This necessary work was the cause of a considerable expenditure that I did not calculate upon.

On the 14th of July, Mr. Turnbull met me at Kirby's Landing, having completed the location of the line of road through the Eagle Pass, from Shuswap Lake as far as it follows the main valley of the Eagle River. On the 17th July, having provided Mr. Turnbull with a boat and supplies, I dispatched him to complete the location of the Eagle River line, with instructions to proceed (as mentioned in your letter of the 3rd July) on completion of that work, to the head of the Kootenay Lake, and complete the exploration of the line to the eastward of it, on which he was engaged the previous year, when forced back by the approach of winter. I then went up to the summit of the mountain, and paid off the few men still engaged on the corduroys, and made up and took over from Mr. Hick all the accounts, &c., of the Shuswap and Columbia River Trail. From July 23rd to August 3rd, I was engaged forwarding my surplus stores, collecting and storing tools, settling outstanding accounts, &c., &c. On August 4th, I received your letter instructing me to repair to Wild Horse Creek, and execute such work as might be necessary to enable pack animals to pass over the trail between Osoyoos Lake and Wild Horse Creek. I, therefore, left French Creek on the 6th for Fort Shepherd. Mr. Hick accompanied me down the Columbia River, to take charge of the working parties on that trail. We arrived at Fort Shepherd on the 10th August; but not being able to get either labourers or pack animals on our arrival, we could not leave until the 14th. We then commenced the work, and I was engaged on that trail making the necessary arrangements to have the requisite work done, until the 24th August, on which day I reached Wild Horse Creek.

Not having as yet sent you in a report of the trail between Fort Shepherd and Wild Horse Creek, I may here state that the principal objections on that trail are—

1. The great height of the mountain to the westward of the Kootenay Bottom.
2. The Kootenay Bottom is flooded at high water. otherwise the trail, with regard to grades and construction, is the best made trail I have yet seen in the Colony. It is true bridges are required over the Salmon, the Goat, and the Mooyee Rivers, as well as over two or three small creeks, to enable pack animals during high water to cross them. The bridge over the Mooyee I look upon as by far the most important of them, and I think ought to be constructed as soon as possible, as its want is much felt by the merchants and packers trading at Wild Horse Creek. A little more corduroying would also be required in addition to that I put in this season, if traffic sufficient to warrant the outlay should go over from Fort Shepherd.

I cannot see that there is any possibility of avoiding the high mountain crossed by the trail above referred to, unless the circuitous route by the valley of that portion of the Kootenay River between Kootenay Lake and the Columbia River is followed, and then that the Kootenay Lake be either skirted to the Kootenay Bottom or crossed with a ferry, both of which would be most objectionable—I think even more so than the present mountain. The Kootenay Bottom cannot be avoided (unless the lake be crossed as before mentioned), as it extends from the boundary line to the south end of Kootenay Lake; (there is a better crossing in American Territory, immediately south of the line;) and that lake extends in a northerly direction for a distance of about ninety miles. I fear, therefore, that owing to the nature of the country, it will be a difficult matter materially to improve on the present line south of the north end of Kootenay Lake. As Mr. Turnbull's Report and Journal, which I forward with this, will give you a description of the country in that neighbourhood, you will be able to judge if it would be preferable to open a line in that direction.

I was detained two days at Wild Horse Creek before I could get any horses, but on the evening of the 26th, having succeeded in hiring three wretched Indian horses, I left, on the 27th, on my return journey to Gold River, via the valleys of the Kootenay and Columbia Rivers, and reached Kirby's Landing on the 18th September, having in that time explored the valley of the Kootenay River, from Wild Horse Creek to a point 1½ miles south of the source of the Columbia River; and the valley of the latter from its source to the mouth of Gold River. As my Journal, accompanied with a map of the route followed by me, which I now forward, will contain full information of this part of the country, I shall only give a general outline in this Report.

The Kootenay River, from Wild Horse Creek to within 14 miles of the source of the Columbia River, a distance of about 48 miles by trail, flows through a fine valley, with extensive meadows on the bottom, and flats and benches on either side, covered with very fine bunch grass, and generally timbered with scattered red pine and larch of a large growth. The timber gets much thicker as the Columbia Lake (source of the Columbia River) is approached. I followed the trail

along the left or easterly bank of the Kootenay River until I reached the ford, which is directly south of the Columbia Lake. We found the water in the main channel about four feet in depth, but had no difficulty in fording it on horseback. On the northerly side of the ford, a low flat covered with bunch grass and scattered red pines, extends for about 14 miles to the Columbia Lake. This lake is about 8 miles in length, and is the true source of the largest river that falls into the Pacific Ocean on its easterly side. From the source of the Columbia River to Kinbasket's Crossing, in Latitude $50^{\circ} 47' 04''$, a distance of about 48 miles, I followed along a very good natural trail on the easterly or right bank of the Columbia River. I shall not describe this portion of the above valley in detail, as it is already well and most accurately described in Dr. Hector's Journal of 1860, which is published in Captain Palliser's Report of his exploration in British North America. The only points in which we disagree are our longitudes, neither of which can be relied upon accurately; Captain Palliser's and Dr. Hector's, for the reasons given in their Reports, and because we know that the longitude of Fort Shepherd, as given by Captain Palliser, does not agree with that of the Boundary Commission under the command of Colonel Hawkins, R. E., which must be very reliable. My longitudes are simply based on the distances travelled from a known longitude, corrected by the different courses and latitudes taken at many points. The point from which I take mine is the mouth of Jordan Creek, which was determined by Mr. Leech in 1865.

Mr. Turville and myself agree almost exactly in our longitudes of the mouth of Toby Creek, No. 2, he taking his starting point from a fixed point on the Boundary Line, where it crosses the Kootenay Bottom, south of Kootenay Lake.

The benches and flats along the easterly bank of this portion of the Columbia River are generally covered with bunch grass, but the timber grows much more plentifully than on the valley of the Kootenay River north of Wild Horse Creek. On the opposite bank of the Columbia River there is not so much bunch grass and more timber. It is my impression that portions of the valley of the Kootenay River, between Wild Horse Creek and the source of the Columbia River, as possibly also portions of the latter valley, south of Kinbasket's Crossing, will ultimately support a considerable agricultural and pastoral population.

In travelling in a northerly direction from Wild Horse Creek, the valleys of the Kootenay, the Columbia to the Boat Encampment, and the Canoe Rivers, appear continuous. There is a marked difference between the character of the rocky mountains to the eastward and that of the Selkirk and other mountains to the westward of the above valley; the Rocky Mountains being a succession of high, rugged, broken, and rocky peaks, the others being more rounded and generally thickly timbered to their summits, except when covered with perpetual snow.

The valley of the Columbia, north of Kinbasket's Crossing, changes very rapidly; it becomes much narrower, the bunch-grass disappears altogether, except on a few spots on the east bank between the above crossing and the mouth of Kicking Horse River; and the banks of the river and mountain sides are covered with a thick growth of timber.

The Columbia River from its source to Kinbasket's Crossing is too shallow in the lower stages of the water for steamboat navigation. From Kinbasket's crossing to the Slate Canon, a distance by river of about seventy-four miles, I consider good steamboat navigation, although in low water some of the bars will probably be rather shallow. I think a steamer could get through the Slate Canon, but the rapids from two to four miles below it are shallow and full of boulders, though not of large size, and I do not think they are navigable. Thence, for a distance down the river of about twenty-five miles, there is good navigation, but it is again impeded by a series of rapids and small falls, some five or six miles in length, which are quite unnavigable. Thence to the northern end of Kinbasket Lake, a distance of about fourteen miles, the navigation is good. From the latter point to the Boat Encampment, a distance of about twenty-two miles, is a series of rapids and riffles, many of a very bad description, and not fit for steamboat navigation.

From the Boat Encampment to the Balles de Mort, a distance of forty-seven miles, may be considered as navigable, although there are three or four bad rapids where lines would be required.

I saw indications of coal below the Slate Canon, but nothing to lead me to believe that any extensive vein exists there. From the Slate Canon to the Boat Encampment, I saw some very fine slate bed-rock, very similar to that on Anlier Creek; and on the easterly side of the river, between these two points, the mountains appeared generally to be of a slate formation; they also extend up the easterly side of the Canoe River, bearing, as far as I could judge, N. 15° W. After leaving the Boat Encampment, I did not see any appearance of slate until I got within a few miles of the mouth of Gold River.

The Kootenay Indians, who live in the valleys of the Kootenay and Columbia Rivers between Wild Horse Creek and Kinbasket's crossing, are rather above the general height of the Indians met with on the Fraser; they are filthy in their habits, and their dress, which is very scant, consists principally of the skins of the

mountain sheep, the cariboo, and the elk; they subsist almost entirely on the flesh of the above animals, the buffalo, and dried salmon. I could not ascertain if they grew any potatoes, but I think not. They have a good many horses, some of which, for Indian horses, are very good ones. They are very indolent, and expert thieves. These Indians do not understand Chinook, and we were obliged to make ourselves understood by signs.

Coming now to the important question of roads, I must, from the more intimate knowledge I have gained of the nature of the country, as well as the climate of the Big Bend, endorse the suggestion I made last year, and recommend that for any permanent road, or even trail, the valley of the Columbia be followed. This valley from the easterly terminus of the Eagle River Pass, or even from the head of the Upper Arrow Lake to the Columbia Lake, is admirably adapted for road building, and considering the nature of the country, the work of construction would not be expensive. The most expensive portion would be from the Boat Encampment to Kinbasket Lake. Should a road or trail be opened at any future time along this valley, the best line for it to follow will be along the easterly or left bank, from the head of the Upper Arrow Lake to a point a short distance below the Boat Encampment, or it might even continue a few miles further along the same bank and cross above the Boat Encampment to the right bank of the Columbia, and thence follow it to its source.

In speaking of a road along the valley of this river, I would call your attention to what I think is not at all unlikely to take place, should the quartz mining in the Big Bend (of which I have but little doubt) prove extensive, and that is, that roads opened in this section of the country should not be located simply with a view to accommodate the travel and freight from the Fraser, going in an easterly direction, but also of an immigration and traffic from the easterly side of the Rocky Mountains, as I am satisfied that should these mines be extensively worked, the larger portion of the immigration, and most probably of the goods also, will come from the eastward.

The Boat Encampment, which is situated at the confluence of three large streams; the Columbia, the river flowing through the south-westerly portion of the Athabasca Pass, and the Canoe River, is, I think, destined to become a point of much importance. If a trail of some thirty-five or forty miles in length should be constructed from a point on the present trail, which passes near the mouth of Gold River, to the Boat Encampment, it would connect with the old Hudson Bay Company's horse trail that terminates at the latter point, and thus open a line for horse travel via the Athabasca Pass, from the valley of the Fraser to that of the Saskatchewan.

With the union of the Colonies of British Columbia and Vancouver Island, and also the confederation of the other British North American Colonies in almost immediate prospect, it must be the desire of all those wishing British interests to prosper in North America, to see a communication opened that will bring these Colonies into more immediate connection with those they are destined ultimately to be so intimately connected with, particularly when it is to the interest of both to attain that object.

In looking forward to the opening of a through line of road to the Saskatchewan, south of the Leather Pass, it now only remains to decide which of the several passes through the Rocky Mountains, south of the Boat Encampment, should be adopted. As the determination of this pass could not be well decided upon without carrying the explorations beyond the easterly boundary of British Columbia, and as it is a matter that affects the Colonies to the eastward of the Rocky Mountains, as well as this one, it would probably be desirable that in deciding on a pass, that the Government of these Colonies should have a representative there, as well as the Government of this Colony, and that their explorations of the different passes be made at the same time.

As I presume the Government are in possession of much more detailed information from the reports of the Chief Gold Commissioner, with regard to the mines of Wild Horse, French, and McCulloch's Creeks, than I can give, it is unnecessary for me to give a report of them here. From what I have seen of the formation of the country this year, and also of the prospects now obtained, I feel more convinced than I was last year, that the quartz mining in the Big Bend will be most extensive, but it will take time to develop it. The first quartz vein in this district was discovered on McCulloch's Creek, about the 1st of August last, by Mr. Wm. Hobb. Other veins of a rich character have since been prospected in the same locality.

The universal want of means, the depression caused by the failure of the early season into these mines, and the extremely difficult nature of the country for prospectors to move about in without trails, have been the reasons why hardly any prospecting was done this season, except on the bars of the Columbia and a few creeks comparatively easy of access.

Before closing this report, I think it but fair to mention that the different members of my party always gave me their best assistance and took a real interest in the various occupations in which they were engaged, without which, in works

so varied and scattered, and where they were often necessarily left much to their own judgment, it would have been impossible for me to have brought to a satisfactory termination.

I remain, &c.,

W. MOBERLY.

NOTE.—For a rough and temporary trail, a line might be got by the valley of Gold River, and thence down a tributary and a portion of the main valley of Bushy River to its mouth, striking the Columbia above the Boat Encampment, in Latitude $51^{\circ} 44' N$. I have not been over the whole of this line, and am therefore unable to give you a description of it throughout. A miner (Mr. Keyman) prospecting up Gold River, states that he reached the divide between the head waters of the above streams on the 24th June, and found snow on it.

W. M.

No. 2.—MR. TURNBULL TO MR. MOBERLY.

Depot Camp, Columbia River,
31st July, 1886.

SIR,—I have the honour to submit for your information the enclosed Sketch and following Report, relative to my exploration of the Eagle Creek Pass, viz:—

From the south arm of the Shuswap Lake I proceeded up the valley, as instructed by you, examining on my way both its banks, as to the practicability of roads, &c., and also keeping in view the river, in order to see what facilities it offered in the way of steamboat navigation, &c.

The valley I found to be very wide and almost level, and thickly covered with a forest of pines, firs, and cedars, and underbrush of such density as to be almost impenetrable, the prickly mountain ash growing in every direction in the most luxuriant abundance. The mountains on both sides are sloping, and also thickly covered with tall pines and firs; in places, however, particularly at the mouth, and about ten miles up stream, on the north side, the slopes are very lightly timbered and covered with excellent quality of feed. Small swamp grass meadows are also interspersed along the bottom, where feed may be had.

The north bank of the valley is lined by a continuous line of low gravel benches, along which a road or trail may be carried on almost a dead level, and with the certainty of being solid and dry the whole of the year round.

The streams putting into the valley are few, all small, and well confined to deep narrow channels, and not spreading all over the flats as is generally the case in all mountain districts. The benches I have mentioned, are more free from standing and fallen timber than the lower flats, and are in every respect better calculated to prove the more eligible site for a road or trail.

The stream along the bottom meanders very much, intersecting the valley in every direction, and almost sweeping each bank alternately; it averages about four chains wide, with easy current, and is in every respect quite navigable for river steamboats at high stage of water, for at least fifteen miles in a direct line up the valley, and by cutting out snags, &c., which at present obstruct the river above this point, it may in all probability be found to be navigable up to the forks, which point I consider to be about twenty miles from the mouth. About four miles from the crossing of the forks a mountain torrent is crossed, which falls with great rapidity, in a succession of low falls, into the main stream; a low bridge, about 60 feet in length will be here required; this creek is the only one where bridging of any consequence is necessary.

Leaving the latter stream, the trail will have to traverse round the face of a very broken hill side, much encumbered with fallen logs, thick brush, and stony slides, for about 1½ miles, owing to a very extensive swamp meadow at bottom, after which a level, lightly timbered bench is again struck, which leads direct to the crossing (see plan at D. and C.) of the North Forks. From the latter point to the mouth, a distance of about twenty miles, I am satisfied that a ten foot forest clearing can be made, with a narrow graded trail, for about \$150 per mile, at an average.

On arriving at the crossing of the North Forks, I found that it was impossible for me to cross over, without running the risk of losing the whole of my provisions

and stores, in consequence of the width and rapidity of the stream, and knowing that you were desirous of ascertaining the terminus of the North Fork, I proceeded up the valley, examining both banks as before. As I have already given you a verbal relation of my journey up, I will be very brief with my description of it, and refer you to my Journal for all details if necessary.

Half a mile above point D. (see plan at C.) the valley narrows suddenly, and becomes a cañon for about half a mile; the river falls with great rapidity, and is confined to a very narrow channel by low, broken, precipitous bluffs on each side; leaving the latter cañon, it again opens out and assumes the same character as before described. The flats on both sides are low, and lightly timbered, and offer every facility for any description of road building. For the next twenty miles the valley continues thus. It then begins to narrow and rise with great rapidity, and about three miles further on the stream terminates in a small pond or swamp lake, at which point I found my Barometer to register 26.100, somewhere about 2,000 feet above the level of the Shuswap Lake. On this summit, and in fact all along the route, the snow had entirely disappeared, and judging from the luxuriant growth of the grass, shrubs, and underbrush, I should say had been off for some considerable period. Immediately beyond the lake, the water falls gradually to the northward, the valley still continuing as before; four miles on, it turns sharply to the westward and joins the same stream up which the present Government trail is now carried, somewhere about the Frenchman's, near the twenty-one mile house. At the point where it turns to the west, several precipitous valleys or gulches join it from the north and east, one of them, the largest and lowest, heads from the same source as the present divide of the Government trail.

Having thus determined the source of the North Fork, I joined you next day at Kior's, where I received instructions from you to at once proceed to the Muddy (on the Columbia) and complete the exploration of the Eagle Creek Pass, up to the point where I had left off, and having now completed the examination of said valley, I beg to lay before you the following Report respecting it.

Having *cached* my spare provisions, &c., at the Eddy, I proceeded up the valley (on the morning of the 20th July), and found that it answered to your description in every respect. Up to the summit (by Barometer 27.926) I estimated the distance at seven miles, and by keeping on the north side of the valley, close to the base of the mountains, a trail or road can be brought on almost a dead level, traversing the whole way over dry, solid gravel, lightly timbered flats, very little encumbered with underbrush or fallen logs. At one point, about four miles from the Columbia, large granite boulders are strewn about the benches in every direction, but by keeping well to the base of the mountains they are entirely avoided. The valley is very wide at its mouth, and rises with a grade not perceptible; it gradually narrows on approaching the summit, at which point it is not more than $\frac{1}{4}$ of a mile wide, and closely hemmed in by high perpendicular mountains, covered to their summits with a dense growth of pines and firs. The bottom, immediately adjoining the stream, is covered with a dense growth of willows and underbrush of various descriptions, with occasional patches of good swamp grass meadows.

As you are already well acquainted with this portion of the valley, it is useless for me to further describe it, particularly as no difficulty in the way of road building exists whatever.

About $\frac{1}{4}$ of a mile westward from the summit, the first lake is struck, which is about forty chains in length, by about twenty-five chains in width; it is encompassed by high spurs from the main mountain range, and which (on the north side) rise with almost precipitous slopes for a considerable height. The south shore is however, not so rocky nor precipitous, as to prevent a good pack trail being built round, with very moderate cost, by following the latter shore; one bluff only, falls perpendicularly to the water's edge; 100 feet above, however, it turns into a narrow sort of rocky, jagged bench, along which a safe pack trail can be built without incurring any serious blasting; the only blasting that I apprehend, will consist of loose crumpings, and the removal of isolated jagged points. The latter bluff will be about two chains in length, if crossed where I have mentioned. After which, up to the west end of lake, the trail can be brought down gradually to the water's edge, along the face of a steep, wooded, rocky slope, but without the least blasting whatever. I estimate the cost of a trail round this lake at about \$350. The next lake (No. 2), is situated about one mile further west, and is connected with the latter by a wide meandering stream; the north side of the valley is much cut up with dried up water channels, which together with the abundance of drift timber, &c., which is strewn around in every direction, prove plainly that at certain seasons it is well washed by mountain torrents. There are no such evidences however shown on the south side of the valley, and it is, in consequence, the most eligible line to adopt. Towards the head of lake No. 2, the bottom of the valley is very swampy, and covered in places with good feed; the latter lake is about forty chains in length by about thirty in width, and is not bound on each side with such steep and precipitous banks; the south shore appears the least

formidable, a low, narrow, broken, rocky bench stretches nearly from one end of the lake to the other, along which an Indian trail is plainly marked, and by a line blasting here and there, low walls, cribbing, &c., I am confident that for about \$500 a good serviceable pack trail can be built along this broken bench.

It may be found, on more detailed examination, that by keeping high up the hill, say 120 feet, a better route may be adopted when the trail may be built, without any short and winding pitches, which will be necessary by the lower route.

From the latter lake the valley becomes a little wider, the banks less rocky and precipitous, and continues so for about 3 miles up, at which point Three Valley Lake is struck. The trail along the latter mentioned three miles will traverse over solid dry flats, covered with a medium growth of timber nearly the whole way.

At our point, about 20 chains from the third lake, the bottom is completely swamped, in consequence of heavier dams, &c., in order to avoid which the trail will have to be brought round the face of a steep, stony, side hill for about 8 chains; after which a dry bench is reached, and which extends to the head of Lake No. 3.

At the head, or east end, of the latter lake, the valley is still narrow, and bound on each side by rough precipices for about three-quarters of a mile, when it then gradually becomes wide, and turns sharply to the northward. The north bank is unquestionably the best line to follow, as all the bluffs, with two exceptions, terminate in low steep slides, sufficiently above high-water mark to leave ample room for a good trail, without incurring any blasting. The two bluffs which I have mentioned rise from the water's edge, but as they are not more than 70 feet above high-water mark, and with narrow flats on top, the trail can be easily brought over them. From the head of the lake to where it bends to the north, a trail may be easily built, and without incurring much blasting, but heavy grading over rough, broken, hill-sides will be necessary, where cribbing and walls will be required. From the bend, low timbered benches extend the whole way to the end of the lake.

This lake, namely Three Valley Lake, is about 1½ miles long, by about 40 chains in width. The cost of trail by the route which I have described, I estimate at about \$800.

To make a trail on the opposite shore, the expense would be great, as the bluffs rise from the water's edge to a considerable height, and extend for nearly three-quarters of a mile without a break.

From the summit of a high mountain, situated immediately north of the head of the lake, which I ascended, I obtained a full view of the whole neighbourhood, and could trace the valley shown on plan, stretching towards Shuswap River. In every respect it bore a very favourable appearance for any description of road: it being wide, low, and bound on either side by sloping hills. Its bottom appeared covered with very extensive tracts of meadow land. I also saw a second low valley which I have shown on sketch, emptying into the latter; and which I could trace to the Columbia River. This valley also appeared low and wide, and evidently leads somewhere in the direction of the Arrow Lakes.

The Three Valley Lake I was led to believe was the last in the valley; but, after about a mile's travel, over lightly timbered flats, I came to the 4th Lake (see plan), which I found is about 1 mile in length, by about ½ a mile in width, and bounded on each side by low benches, over which the trail may be brought at the usual average cost.

From the latter lake to the Forks, there are no other lakes, but there are numerous very extensive swamps and meadows, which at the present time are much covered with water, which will afford abundance of food for animals, so soon as the water falls to a little lower stage. From the lake to the Forks, the character of the country is very similar, as regards trail building, to the portion between the Forks and the Shuswap Lake; the only difference being that the valley has not such a wide bottom. There are two creeks to cross requiring bridging, between 40 and 60 feet in length. The trail throughout this portion may, like the other parts, be brought on almost a level, and will be perfectly dry and free from swamps the whole season round.

I have shown in the accompanying sketch two crossings of the North Forks; the one at D. will require a bridge about 200 feet in length, and will be very difficult to build, so as to withstand the very rapid current, and heavy drift timber which passes continually down during high water. At point C, where the canon commences, and which I have already described, a bridge 60 feet in length will span the river. The approach will doubtless be rather expensive, owing to the broken and rocky nature of the hill side; but, on the whole, it will cost considerably less than by the lower route, and will be much more permanent afterwards.

To conclude, I beg to say that the valley throughout is unquestionably the best that can be found through the Gold Range, as it is well suited for any description

of trail, road, or railway, and which would be open for traffic nearly the whole year round.

ABSTRACT OF ESTIMATED COST.

From Shuswap Lake to the Forks, including bridge	\$4,000
" The Forks to the west end of Threco Valley Lake ...	2,800
" The 3 Lakes	2,050
" The Summit to the Columbia River, including the	
portages between the lakes	2,100

Total..... \$10,950

I have, &c.,
J. TURNBULL.

No. 3.—MR. TURNBULL TO MR. MOBERLY.

New Westminster,
23rd November, 1866.

SIR,—I herewith forward for your information, a copy of the Journal kept by me whilst employed under your direction exploring through the Gold and Selkirk Range.

I have already forwarded to you a detailed report relative to the practicability of a line of road through the Eagle Creek pass (Shuswap Lake.) All the information that I can give, with reference to my last exploration, between Kootenay Lake and the head waters of the Columbia River, you will find fully detailed in my Journal.

With reference to the latter exploration, I will merely state that I am now fully convinced that no route suitable for a waggon road can be found, south of the Gold Stream Valley, through this formidable range; and from what I have seen of the range, I am almost certain that no route suitable for a waggon road can be found, but by the valley of the Columbia. You will see, by reference to my Journal, that by Creek No. 3 and Toby Creek is the only place where the range can be crossed even with trail. By this route, should it ever be found necessary, a good trail might be made, which would open the country to the Lake de l'Esprit and Wild Horse; and I am inclined to believe that, at some future time, a trail through in this direction will be found necessary, as I am almost certain that gold will be found in paying quantities all over this section of country. At the present time there are a good number of men prospecting, both about Lake de l'Esprit, the head waters of Kootenay Lake, and the Kootenay River. Should it be found necessary to build trails through in this direction, I have only to say that the cost of construction will not be great, as there are no difficulties whatever in the way.

I forward with Journal, tracings showing the different valleys explored, and will, if you think it necessary, give more elaborate plans or report at any time you may require.

I am, &c.,
J. TURNBULL.

No. 4.—JOURNAL OF THE SECOND YEAR'S WORK AND EXPLORATION IN THE COUNTRY BETWEEN THE 49° AND 53° PARALLELS OF N. LATITUDE AND THE 115° AND 120° MERIDIANS OF W. LONGITUDE, BY W. MOBERLY.

Wednesday, March 28th.—Having received instructions, in a letter dated the 23th inst., from the Chief Commissioner of Lands and Works and Surveyor-General of British Columbia, to proceed to the Columbia River and resume "the construction and exploration of trails, &c., &c." in that District, I left New Westminster at noon to-day, with the party appointed to accompany me, on board the steamer Lilboot, bound for Yale. We reached Coe's Ranch at dark, and lay there for the night.

Thursday, April 19th.—Left camp at 7:30 a.m., and arrived at Seymour at 7:30 p.m. Was obliged to break our way through the ice the whole distance. A few showers during the day.

Friday, April 20th.—Pitched camp; dried cargo; prepared instruments for survey of town site, &c.

Saturday, April 21st.—Set Turnbull at work to survey high and low water mark of reserve, &c. Fine in the morning, but rained in afternoon. The first express arrived in the evening. Could not get Indians to pack.

Sunday, April 22nd.—Remained in camp. Several boats arrived with miners and goods. Wrote to Messrs. Smith & Ladner about the storing of my supplies. No Indians to be got to pack to Columbia River.

Monday, April 23rd.—Continued survey of town site. Weather fine and warm. Lavean's boat arrived.

Tuesday, April 24th.—Sent Mr. Hick out on trail to complete bridges. Rained steadily all day. Moore's large scow arrived, and reported the loss of the Hudson Bay Company's steamer Labouche.

Wednesday, April 25th.—Engaged part of the day with party about town lots. A good deal of rain. Mr. O'Reilly arrived in the evening, and brought letters, and \$2,500 from the Surveyor General.

Thursday, April 26th.—Wrote to the Surveyor General. Busy about town lots. Rained most of the day.

Friday, April 27th.—Messrs. Gaggin and O'Reilly left in forenoon. Sent Mr. Layton back to Lytton for Indians.

Saturday, April 28th.—News arrived to-day that the steamer Forty-nine had reached the Dalles de Mort.

Sunday, April 29th.—Remained in camp.

Monday, April 30th.—Engaged about town survey.

Tuesday, May 1st.—Engaged about town survey.

Wednesday, May 2nd.—Completed survey of town site. Settled accounts. Took latitude of Seymour, which was found to be $51^{\circ} 19' 41''$ N. Newton's Barometer read 28.40; Elliot's do. 28.90. Weather clear and fine.

Thursday, May 3rd.—Completed plans of Seymour. Paid off some Indians who had been packing for Hick's trail party; paid Lavean and Romano. Wrote to Surveyor General and Layton. Prepared loads to take to the Columbia River. Several boats arrived with miners and goods. Weather clear and hot.

Friday, May 4th.—Started at noon, with Turnbull, Howell, and Perry, for Columbia River. Reached French Prairie in the evening, and slept at Faujas. Advanced Mr. Hick, on account of Shuswap trail, \$400. Barometer in evening 28.00. Snow from six mile hill to French Prairie, 2 to 3 feet in depth.

Saturday, May 5th.—Started at 8 a.m., and reached the 19 mile house, which is at bridge over north fork, and camped. Weather clear and fine; barometer 27.50; 3 to $\frac{1}{2}$ feet of snow on portion of trail passed over to-day.

Sunday, May 6th.—Remained in camp; bought 41 lbs. of flour. Took latitude, which was found to be $51^{\circ} 23' 45''$; barometer 27.50; weather clear and fine.

Monday, May 7th.—Started at 5 a.m., and reached the second lake from Seymour, on the mount, where we camped. Found the snow got deeper and deeper as we ascended the mount, its depth at this place being about 10 feet. Barometer in evening 26.50; weather clear and very hot.

Tuesday, May 8th.—Left camp at 6 a.m., and reached a point about 7 miles from Kirby's Landing, on the Columbia River. Snow on the summit, in places, about 15 ft. in depth. Barometer on summit 24.25; snow hard and good for travelling until 9 a.m., when it got soft and almost impassible; barometer at camp in evening 24.40.

Wednesday, May 9th.—Left camp at 6 a.m., and reached the Columbia River at 9 a.m. The travelling was very bad as the snow was very deep and soft. To clear away the snow now would cost such a large sum, that under existing circumstances it would be absurd to incur that expenditure. Rained a little during the afternoon; barometer at Columbia River 22.35. Purchased some provisions and a boat for \$20. Saw many miners from French and McCulloch's Creeks, who said no work was going on, as they were all in much too early to mine. Prepared to send Howell and Perry down to the Eagle Pass to find if there was any snow on the divide.

Thursday, May 10th.—Sent Howell and Perry off for Eagle Pass. Fitted boat to pull four oars. Received letter from Mr. O'Reilly; wrote several letters. Discharged two Indians that packed for me.

Friday, May 11th.—Left in a boat with three Indians for Gold Creek. Stopped at Steamboat Landing (La Porte), 2 miles below the Dalles de Mort, where I received a letter from Mr. Jane, with lists of all the tools, &c., forwarded by him, which I found stored with Mr. O. T. Nichols. Purchased a few supplies, and engaged a man named Buckley to assist us up the river; went up to the foot of Death Rapid, and camped. Some men mining on a small flat, $\frac{1}{4}$ of a mile below La Porte, were making, with shovels, about \$3 a day to the land.

Saturday, May 12th.—Started at 7.20 a.m. Poled and dragged the boat up the Dalles de Mort; reached a point $\frac{1}{2}$ a mile below the mouth of Gold River, and camped; was very unwell all day.

Sunday, May 13th.—Unable to get out of bed to-day.

Monday, May 14th.—Finding I am getting worse and shall probably be laid up for some time, I sent Turnbull to locate the line for trail to French and McCulloch Creeks. Weather wet, cold, and chilly. Buckley returned in evening, with boat. Mr. J. Waite arrived in evening from Wild Horse Creek.

Tuesday, May 15th.—In bed all day; rained hard; Mr. White remained with me.

Wednesday, May 16th.—Sent Buckley and Dick to Wilson's Landing with White and Huff. Rained most of the day very heavily.

Thursday, May 17th.—In bed; weather windy and chilly.

Friday, May 18th.—Still laid up; weather wet, cold and windy.

Saturday, May 19th.—Mr. O'Reilly came to see me. Showery and windy. Mr. O'Reilly returned in the afternoon to Wilson's Landing.

Sunday, May 20th.—Remained in camp, much better. Mr. R. T. Smith arrived at 1 p.m., and shortly afterwards Turnbull and party came in, having decided on a line for a trail from French Creek to the mouth of Gold River; he could not find any pass through the mountains so as to strike into the valley of Downie Creek. Heard of loss of boat at Dalles de Mort with 17 men.

Monday May 21st.—Started on return to La Porte (Steamboat Landing); dropped boat over rapids, and reached La Porte at 2 p.m., where I found Howell and Perry, who had returned from Eagle River Pass. They found no snow on the divide of that pass, and are of opinion it had disappeared a month before their arrival (12th May) on it. Got tools, &c., ready to commence opening a trail to French Creek, and then went down with two Indians to Kirby's Landing, to get up some provisions for road party, and camped at that place.

Tuesday, May 22nd.—Remained at Kirby's Landing and wrote to the Colonial Secretary, the Surveyor General, and Mr. Layton. Had supplies got in readiness to forward to La Porte.

Wednesday, May 23rd.—Sent up supplies in boat to the Steamboat Landing. Examined line for trail from Kirby's to La Porte. Purchased some additional supplies at Steamboat Landing. Established road camp, and hired labourers.

Thursday, May 24th.—Commented work on trail with about 30 men; Mr. Howell in charge as foreman. Wrote to Surveyor General. Capt. L. White, of the steamer Forty-nine, called on me this evening.

Friday, May 25th.—Remained with the men working on trail most of the day. Sent Perry and Turnbull to finish the blazing of line to French Creek. Left Howell's camp in evening for Hick's camp; remained over night at Kirby's Landing.

Saturday, May 26th.—Crossed mountain to Hick's camp (20 mile house). Received letter from Mr. Tuttle, authorizing a further outlay on this trail. Found the snow on the mountain had melted away very much. Sent six dozen shovels, &c., from Kirby's landing to the summit. Camped at 20 mile house. Made contract with Wm. Deitz, to pack a quantity of supplies from Seymour to 21 mile camp (Layton's camp).

Sunday, May 27th.—Moved Hick's camp to foot of mountain. Layton and Indians arrived; sent them on to Hick's camp with loads. Wrote to Mr. Birch and the Surveyor General; enclosed voucher for \$376 75 to Surveyor General.

Monday, May 28th.—Had all the supplies stored at 20 mile house moved to Layton's camp, and a small store shed built for their accommodation, and those that are to be packed out from Seymour.

Tuesday, May 29th.—Went in morning to the Depot camp, and moved all the men and a portion of the supplies to summit of mountain. Part of Hick's men commenced clearing away the snow. Sent eight Indians, with loads of provisions for Howell, over to Kirby's landing. Camped for night at Layton's camp.

Wednesday, May 30th.—Went up to summit in the morning and camped with Hick's men; remained there the rest of the day to see how they got on with the snow clearing, and instructed them how to cut the snow to save the waste of labour. Engaged and set about twenty more men at work on snow.

Thursday, May 31st.—Left camp in the morning and travelled to Kirby's landing, where I camped.

Friday, June 1st.—Proceeded from Kirby's landing to Howell's camp, where I remained all night. Inspected trail from Kirby's to Steamboat Landings, which I found would be opened for pack animals the next day; found Howell had about eight miles of trail from the Steamboat Landing opened.

Saturday, June 2nd.—Remained with Howell's party all day on the trail, and had camp moved to a point about nine miles above La Porte.

Sunday, June 3rd.—Left Howell's camp and proceeded a part of the way to French Creek, through the woods; camped. Mr. McMillan brought me letters in the evening from Mr. Trutch and Mr. Howse, requesting me to go over to Seymour and attend to the sale of lots to take place on the 9th instant. As I was on my way to French Creek to raise money to pay off a large portion of the men employed on the snow clearing, and was unable to return so as to reach Seymour by the 9th, wrote to that effect to Mr. Trutch and Mr. Howse. Mr. R. T. Smith came and stopped at my camp to-night. Heavy rain.

Monday, June 4th.—Travelled all day through woods, and reached French Creek in the evening, where I camped. Instructed Mr. Turnbull to employ a gang of men, and return, and cut out timber and underbrush along line of trail from French Creek to meet Howell's party.

Tuesday, June 5th.—Arranged with Mr. O'Reilly about money matters and advertising for lease of Perry on Gold River, &c. Left French Creek in the afternoon, and examined the different places where I thought it advisable to cross Gold River with trail; decided upon crossing just below the mouth of McCulloch's Creek, and camped there.

Wednesday, June 6th.—Set Turnbull at work with a party of about twenty-five men, to open the trail from French Creek down in the direction of Howell's party, and in the evening returned and camped with Howell's party.

Thursday, June 7th.—Travelled from Howell's camp to Kirby's Landing. Met Perry with Hick's party.

Friday, June 8th.—Waited at Kirby's Landing for arrival of Lytton Indians with supplies; they came in at 2 p.m. Set Perry at work to have supplies forwarded to La Porte. Made up accounts of Lytton Indians, and paid them off. Paid off Turnbull's Indians. Balanced accounts, &c. Mr. McMillan arrived in evening with letter from Mr. Trutch, requesting me to meet him on the 9th (to-morrow), at the Depot camp.

Saturday, June 9th.—Crossed mountain to Depot camp, and met Mr. Trutch there.

Sunday, June 10th.—Remained at Depot camp. Made up sundry accounts and wrote memorandum for Mr. Trutch. Mr. Trutch went up to summit of mount to-day with Mr. Layton. Paid Mr. Trutch \$555-37½ to take up some of Hick's orders that had gone into Seymour, and \$285-68 for Wm. Wade.

Monday, June 11th.—Paid Mr. Layton \$612 to pay Wm. Deitz and J. Carragher's debts. Mr. Trutch left for Seymour, and immediately afterwards I started back for the Columbia River, and reached Kirby's Landing in the evening. Paid Wm. Hick \$500, and, as snow clearing would be finished to-night, instructed him to keep only about 15 men employed, and return and put in corduroys and improve worst portions of trail over the mountain.

Tuesday, June 12th.—Met Perry, who had been employed forwarding supplies to Howell's camp. Instructed him to get ready to explore easterly branch of the Elk-creek west River. Purchased a canoe for him at Steamboat Landing. Sent two men to bring supplies from Depot camp for his trip. Busy with accounts, &c.

Wednesday, June 13th.—Received word that Deitz's train of horses would cross the mountain to-day with supplies for me, therefore waited for their arrival at Kirby's Landing. The two men sent to Layton's camp for supplies for Perry arrived in the afternoon. Engaged Merriam to accompany Perry, and started them off for Elk-creek west River. Mr. Romano and the horses with my supplies arrived in evening. This is the first train that has crossed the mountain from Seymour this year.

Thursday, June 14th.—Left Kirby's Landing, and travelled to Howell's camp, which I found moved to a point about four miles below the Gold River Ferry, remained here for the night.

Friday, June 15th.—Remained at Howell's camp until 12 noon, making up accounts, &c. Advanced Mr. Howell \$250, and started for French Creek, which place I reached at 7 p.m. Found Turnbull had completed trail from a point about 1½ miles below the Ferry on Gold River to French Creek, and had laid out a portion of the town.

Saturday, June 16th.—Remained at French Creek. Visited several claims; found some were getting pretty good pay out, and several others nearly ready to begin washing. Mining prospects greatly improved since my last visit to French Creek. Had some town lots laid out.

Sunday, June 17th.—Remained at French Creek.

Monday, June 18th.—Remained at French Creek. Wrote to Mr. O'Reilly relative to Reveries at Berries on Gold River and Columbia River at La Porte; also at the mouth of Eagle River and Skunkhole Creek. Settled all accounts for work done on trail by Turnbull's party, and paid the men their wages. Balanced accounts with Mr. O'Reilly. Completed survey of town lots.

Tuesday, June 19th.—Borrowed \$1,500 from Mr. O'Reilly on Government account, and left French Creek with Turnbull. We went as far as Howell's camp, and stopped there for the night. Advanced Mr. Howell \$600 to pay wages.

Wednesday, June 20th.—Travelled from Howell's camp to Kirby's Landing.

Thursday, June 21st.—Remained at Kirby's Landing, and discharged Columbia River Indians. Arranged for Turnbull to leave next day for Seymour, to locate line for road through Eagle River Pass.

Friday, June 22nd.—Dispatched Turnbull's party to Shuswap Lake, with instructions to meet me in three weeks at The Eddy, on Columbia River. Spent rest of day at accounts and writing report to Surveyor General.

Saturday, June 23rd.—Remained in camp, busy with accounts.

Sunday, June 24th.—Remained in camp, sick. Mr. R. T. Smith arrived from Seymour.

Monday, June 25th.—Not well. Mr. Cornwall arrived in the evening. Wrote letters to Surveyor General, which I forwarded by Mr. Cornwall, together with vouchers. W. Hick came to see me.

Tuesday, June 26th.—Received letters from Turnbull and Layton. Paid W. Deitz balance of account for packing from Seymour to 21 mile camp.

Wednesday, June 27th.—In camp, sick.

Thursday, June 28th.—Very heavy rain and wind storm. Trails blocked up with fallen timber. Made oars for boat.

Friday, June 29th.—Employed getting fallen timber cleared out of trail between Kirby's and Steamboat Landings. Sent word to Howell to set his party at work to clear fallen timber out of French Creek trail.

Saturday, June 30th.—Fitted up boat for trip down Columbia River. Wrote to Layton to hurry over supplies. Examined fallen timber on trail above La Porte.

Sunday, July 1st.—Ordered Mr. Hick to discharge most of his party on the mountain, and close the work as soon as possible. Set another party at work on fallen timber, above La Porte.

Monday, July 2nd.—Went up to work going on above La Porte, and remained at Howell's camp for the night. Met Mr. O'Reilly there.

Tuesday, July 3rd.—Returned to Kirby's Landing; men have made good progress in clearing away fallen timber.

Wednesday, July 4th.—Forwarded supplies for men working at fallen timber. Columbia River attained its greatest height to-day.

Thursday, July 5th.—Remained in camp, writing, &c.

Friday, July 6th.—Went up to fallen timber and discharged some of the men. Received letter from Mr. Trutch.

Saturday, July 7th.—Wrote to the Surveyor General. Busy with accounts. Received and stored a cargo from Layton's camp.

Sunday, July 8th.—Remained in camp writing. Sent train back to Layton's camp for another load of goods.

Monday, July 9th.—Discharged the larger part of Howell's party.

Tuesday, July 10th.—Heavy rain in forenoon. Settled accounts with R. Howell, and took over pay lists, &c., from him.

Wednesday, July 11th.—Went up to La Porte, and took up a number of tools, &c., &c., that had been used on the Shuswap trail, and stored them with Duncan Robertson.

Thursday, July 12th.—Train of goods arrived from Layton's camp, which I stored at Kirby's Landing. Prepared to go down Columbia River to meet Turnbull at the Eddy.

Friday, July 13th.—Rained hard most of the day. Perry returned from his trip up the east fork of the Illecille-want River. He did not reach the divide, but reported a low, wide valley as far as he went. His exploration has not settled the point whether it would be possible to get through the mountains by this valley, but I fear not. He ought to have got on the divide, and his failure is a great disappointment to me. He reports a most difficult country to travel through, owing to fallen timber and underbrush of a very thick growth. Learnt that the steamer Forty-nine had been nearly lost in the Little Dalles, four days ago, and is now at the foot of the Dalles undergoing repairs, preparatory to her return to Fort Shepherd.

Saturday, July 14th.—Mr. O'Reilly started down the Columbia to-day, in a boat, to catch the Forty-nine. I sent Perry down (not being able to go myself) with supplies for Turnbull, and ten minutes after I had dispatched Perry, I was surprised to see Turnbull come into my camp, he having crossed over with his party from the head of the main branch of the Eagle River.

Sunday, July 15th.—Remained in camp; wrote Mr. Turnbull instructions as to completion of the location of the line of road through Eagle River Pass, and also of continuation of the exploration of country west of Kootenay Lake and the source of the Columbia River.

Monday, July 16th.—Prepared boat and supplies for Messrs. Turnbull and Howell to go down river for the Eagle River and other explorations. Train arrived with stores from Layton's camp.

Tuesday, July 17th.—Dispatched Mr. Turnbull and party down the Columbia River.

Wednesday, July 18th.—Went up to Hick's camp, on the summit of mountain, to close all work on Shuswap trail.

Thursday, July 19th.—Completed some corduroying, and then stopped all work.

Friday, July 20th.—Discharged all the remainder of Hick's men, and took over pay lists and vouchers from him. Forwarded remainder of stores and tools to Columbia River.

Saturday, July 21st.—Waited for Indians to return from Seymour, to pack my things to the Columbia River. Arranged with Mr. A. Townsend to pack surplus stores from Kirby's Landing to French Creek. Much rain to-day.

Sunday, July 22nd.—Heavy rain all day; remained in camp.

Monday, July 23rd.—Travelled from the Summit to Kirby's Landing.

Tuesday, July 24th.—Remained at Kirby's Landing, and forwarded all surplus stores to La Porte.

Wednesday, July 25th.—Heavy rain; remained at Kirby's Landing.

Thursday, July 26th.—Remained at Kirby's Landing and completed sundry accounts. Steamer Forty-nine arrived this evening.

Friday, July 27th.—Remained at Kirby's Landing; raining.

Saturday, July 28th.—Went from Kirby's Landing to French Creek.

Sunday, July 29th.—At French Creek.

Monday, July 30th.—Paid off Perry, and advanced Hick \$100 on account. Tried to sell surplus stores; could not get cash for them.

Tuesday July 31st, to Friday, August 3rd.—At French Creek; disposed of a few goods.

Saturday, August 4th.—Received letter from the Surveyor General, instructing me to go to Mooney and repair Fort Shepherd trail, &c. Wrote note to Hick to come back from his quartz prospecting on McCulloch's Creek.

Sunday, August 5th.—Saw Mr. Hick, who had discovered a vein of quartz containing gold on the side of the mountain to west of McCulloch's Creek; this vein is reached by going up McCulloch's Creek about four miles, and then up the dry bed of a mountain torrent for nearly a mile, on the westerly side of McCulloch's Creek. Arranged with him to meet me at La Porte, and go down in steamer Forty-nine to Fort Shepherd.

Monday, August 6th.—Travelled from French Creek to La Porte.

Tuesday, August 7th.—Remained at La Porte waiting for arrival of steamer *Forty-nine*; she arrived in the evening.

Wednesday, August 8th.—Remained at Steamboat Landing. Hick arrived, and brought specimens of quartz. Wrote to the Surveyor General, and forwarded quartz specimens, and Turnbull's report and sketch of the line of road through Eagle River Pass, which I had received yesterday by the steamer *Forty-nine*.

Thursday, August 9th.—Left La Porte at 2 p.m., in the *Forty-nine*, and ran down to the middle of the Upper Arrow Lake, where we tied up for the night. On our way down left a party of prospectors at the mouth of the Illecillewaet River.

Friday, August 10th.—Arrived at Fort Shepherd in the evening. Saw Turnbull and Howell going up river in a bark canoe, about 10 miles above Shepherd.

Saturday, August 11th.—Remained at Fort Shepherd. Could not get horses to pack or laborers to work on trail.

Sunday, August 12th.—Remained at Fort Shepherd. Took latitude with box sextant, which I made $49^{\circ} 1' 7''$ N. Arranged with men to work on Kootenay trail.

Monday, August 13th.—Remained at Fort Shepherd for arrival of some Indians with horses, who had agreed to pack Hick's supplies out to summit of mountain west of Kootenay River.

Tuesday, August 14th.—Left Fort Shepherd, and after many delays caused by the want of saddles and ropes on the Indian horses, reached a point about 7 miles from the Ferry.

Wednesday, August 15th.—Travelled to the crossing of the Salmon River, clearing out all fallen timber as we went along the trail. The wretched Indian horses being completely worn out, I was obliged to stop here for the night. Spearred several fine salmon in river.

Thursday, August 16th.—Did not leave camp until 9 a.m., as horses had strayed away. Reached a point about 24 miles to the west of summit of trail, and there being magnificent grass I camped here. I met Mr. O'Reilly, accompanied by Messrs. C. and G. Oppenheimer, at the foot of the mountain, on their way from Wild Horse Creek to Shepherd. Made several arrangements with Hick and other men for execution of the requisite work on this trail.

Friday, August 17th.—Left camp at 6 a.m., and reached a point within 4 miles of Dendrey's Pass, and camped on bank of large stream. No feed for animals. Spearred some very large trout.

Saturday, August 18th.—Left camp at 6 a.m. and reached Kootenay Ferry at noon. Waited four hours for the arrival of Indian horses. Crossed horses over first blough and then went up lake about a mile to get away from the mosquitoes, which were in myriads at the ferry.

Sunday, August 19th.—Spent the whole day in making the crossing of the Kootenay Bottom, and examining banks of stream, sloughs, &c., to see if I could find a better crossing. Camped at a stream about 4 miles beyond the Kootenay Bottom.

Monday, August 20th.—Left camp at 5 a.m., and reached a point about 7 miles east of Goat River crossing, where we found good grass. Our pack horse is nearly worn out, and I fear will not be able to reach Wild Horse Creek. I do not think a proper bridge for mules could be built over Goat River for a less sum than \$2,000.

Tuesday, August 21st.—Started at 7.30 a.m. Passed junction of this trail with the Walla-Walla trail at noon, and camped on bank of the Moyea River, about 8 miles east of Junction. John Edwards met and camped with me. Caught many very fine trout.

Wednesday, August 22nd.—Left camp at 7.30 a.m., and reached a stream 4 miles to eastward of crossing of Moyea River, which is between two fine lakes. Camped here as we found good grass for horses on flat below, to which packers have cut a trail.

Thursday, August 23rd.—Left camp at 8 a.m., and reached Joseph's Prairie at 3.30 p.m., where I camped. This is a very beautiful prairie, and appears to be several miles in extent, and both the prairie and surrounding low hills are covered with rich bunch and other grasses. I think some very good farms will at some future day be brought under cultivation here.

Friday, August 24th.—Started at 8 a.m., and reached Wild Horse Creek at 11 a.m. Was unable to hire horses to go on to the source of Columbia River.

Saturday, August 25th.—Remained at Wild Horse Creek. Took latitude, which I found to be $49^{\circ} 28' 51''$ N. Sent out to try and hire horses from some Kootenay Indians who were camped about 5 miles off.

Sunday, August 26th.—Succeeded to-day in hiring three Indian horses to convey supplies to north end of Columbia Lake. Purchased supplies for journey down the Columbia River, and had packs prepared.

Monday, August 27th.—Left Wild Horse Creek, and reached a creek about 18 miles from it, on trail on the east or left bank of the Kootenay River. The timber here was for the most part of the distance over flats and benches which are timbered with western red pine, larch, &c., and the whole covered with a growth of bunch grass. On the lower flats on both sides of the river are extensive meadows of swamp grass, and a good deal of land well adapted for agricultural purposes. The valley between the Rocky Mountains and those to the westward of the Kootenay River is from 3 to 5 miles in width, and the Kootenay River as seen from the trail appears a fine, placid stream, with a current of about 1½ to 2 miles per hour.

Tuesday, August 28th.—Travelled about 24 miles to-day, still following trail along east bank of the Kootenay River, which passes along some side hills and flats, and is much more broken than that passed over yesterday. Rich bunch-grass the whole distance, more thickly timbered, and not so well watered, after crossing Sheep Creek, as it is south of that creek. I did not see any appearance of an opening through the Rocky Mountains to the eastward, the whole distance from Wild Horse Creek to the point reached to-night.

Wednesday, August 29th.—At about a distance of four miles from last night's camp, I reached the ford across the Kootenay River, which we crossed, and found the water in the main channel of river, which flows through gravel flats, about four feet in depth. Crossing this ford, we followed a trail over a low flat, covered with bunch-grass and scattered red pine, about 14 miles wide, and found ourselves at the south-east corner of the Columbia Lake, which is the real source of the Columbia River, and from this point to its mouth its length is about 1,200 miles. There appears to be very little difference between the level of the Kootenay River, at the ford, and that of the Columbia Lake. I was unable to get the latitude here, as the sky was covered with clouds. At the head of the Columbia Lake there is much marshy ground. I followed the trail along the easterly side of lake, which passes over rocky bluffs at both ends of lake; the height gained on this bluff at south end of lake being about 500 feet above its level; the other portions of this part of the trail are generally on high benches; bunch-grass all the distance; timber, scattered red pine, &c. Reached a point about 1 mile north of lower end of lake, and camped at a small stream where there was a large encampment of Kootenay Indians, who were engaged curing salmon, which are caught in great abundance here, but are very poor and coarse, and gave me the idea of all being worn out fish. Paid off Indian that packed my supplies, &c., from Wild Horse Creek, and hired three more horses from the Indians here, who had a band of 300 or 400 head, some of which were tolerably good horses.

Thursday, August 30th.—Having taken the latitude of this camp, which I made $56^{\circ} 19' 55''$ N. (the observation was not good and could not be accurately relied upon) I started at 12:30 and travelled some 10 or 11 miles, where I camped. The whole distance travelled to-day was along a very good trail, which generally passed over flats and benches. There were a few unimportant side hills on this portion of the trail. Fine bunch-grass covered all the flats, benches, and side hills. The river bottom is wide, and there is much flooded land, which I see is shown on Capt. Palliser's map (in part) as a lake, and many portions, be considered in that light. This portion of the valley varies from 3 to 5 miles in width, and there is not any break in the mountain ranges on either side of it, except where a small creek (Toby's Creek, No. 1) falls into it on its westerly side, at the north end of Columbia Lake. This evening the weather was very cold, and there was a strong north wind blowing.

Friday, August 31st.—Left camp at 9 a.m., and travelled about 28 miles, where we camped on a stream, through the valley of which the Indians tell me there is a good trail, at a low elevation, through the mountains to the eastward. It would therefore lead into the Vermillion Pass. The trail passed over to-day runs along several steep side hills; a fine growth of bunch-grass the whole distance. The timber begins to grow more plentifully than on that portion passed over yesterday. A large creek (marked on our official maps and named Toby's Creek, No. 2) falls into the valley of the Columbia from the westward, about latitude $50^{\circ} 32' 00''$ N. It is by the valley of this creek that the old Indian trail (Kinbasket's trail) to the head of Kootenay Lake was opened, and I was in hopes to have met with or heard of Mr. Turnbull here, who is exploring this line. I, however, could hear nothing about him. According to the latitude given by Dr. Hector, the trail leading into the Vermillion Pass is about 3 miles south of the mouth of Toby Creek, No. 2. Two families of Indians overtook me to-day, and I got some information from them about the country. They tell me that on the flats on either side of the upper Columbia, the deepest snow in winter does not exceed six inches in depth, and that their horses winter there very well. This was in part corroborated by several leases at different points along this trail that I saw, and which had been built by stock owners who had wintered large bands of cattle and horses there a year or two previous to this date. The upper Columbia Indians do not grow potatoes, nor do they cultivate any land; but I could not clearly make out if they grow potatoes on the Kootenay River, between the source of the Columbia River and Wild Horse Creek, but I think not.

Saturday, September 1st.—Left camp at 9 a.m., and reached Kinbasket's crossing at 10:40 a.m. I here paid off the Indian that packed my supplies from the Columbia Lake, and, having taken the latitude of this crossing, which I made $56^{\circ} 47' 08''$, I put all my supplies into a small log canoe, and ran down to Kinbasket's fishing station, about 24 or 30 miles further down the river, where we found about 15 Indians employed drying salmon, which are caught in large quantities here. These Indians are a portion of the bluesway

tribe (from Little Sunwap Lake), and settled here about 20 years ago. The banks of the Columbia River are low and swampy, and immediately adjoining the river are covered with a dense and almost impenetrable growth of willows, crab-apple, and other bushes. The water in the river is of a dirty, whitish colour, owing to its flowing through a country where many of the banks of the river are composed of calcareous mud. The character of the valley from this point changes rapidly; the mountains on both sides of the river rising almost from its banks, and generally covered with a dense growth of timber and brushwood, and the bunch-grass almost entirely disappears. The following information I obtained from Kintsekit, the chief of the Sunways, who is the most intelligent Indian I have met with, and from what I saw of the country both before and after he left me, has a thorough knowledge of the country from Wild Horse Creek to the Bent Encampment, and thence to Corville. He says there is a good trail through the Rocky Mountains by the valley of a creek about 3 or 4 miles south of his fishery; also one by a valley which, by his description, must be the valley of Kicking Horse River, described by Dr. Hector. He also says he has taken horses up the valley of Tully Creek, No. 2, nearly to its source, and then leaving them has passed on foot over a high divide to the head of Kootenay Lake; (this is the line Mr. Turnbull is now exploring). It is his opinion that there is not any low divide through the Selkirk Range, with the exception of one from the mouth of the Bushey River, in latitude $51^{\circ} 44' N.$ to the middle fork of Gold River. He has taken horses down the right bank of the Columbia River to the southerly end of Kinbasket Lake, and thence over the mountains to Jordan Creek, from which point he followed the Indian trail (described by me last year) to Seymour. This trip, however, took him several months to perform.

Sunday, September 2nd.—Remained at Kinbasket's camp, and, after much trouble, succeeded in purchasing a very bad bark canoe to make the trip down to the mouth of Gold River. Took latitude, which is $50^{\circ} 49' 40'' N.$ Weather very cold at nights.

Monday, September 3rd.—After mending canoe, I left camp at 12.30 p.m., and ran about 5 miles down the river, where we were obliged to land and camp to repair our canoe.

Tuesday, September 4th.—Having repaired the canoe, I left camp at 1.20 p.m., after taking the latitude, which I made $50^{\circ} 54' 32''$, and we ran down about 10 miles, when we met three canoes filled with Indians. I therefore stopped for the night to see if I could get a good canoe from them.

Wednesday, September 5th.—After much trouble, I succeeded in getting a tolerably good canoe from these Indians, and ran about 10 miles further down the river, when we were again obliged to land and patch and pitch our canoes. I took the latitude at this point, which I made $51^{\circ} 02' 00'' N.$, and Kinbasket pointed out to me a low place in the mountains to the eastward, some 800 feet in height, over which he says horses can be taken into the Vermilion Pass. Having mended the canoes, we started and ran about 10 miles further down the river, and then camped. There is much low, flooded land immediately adjoining the banks of the river, and many sloughs.

Thursday, September 6th.—Ran down to the mouth of Kicking Horse River, where I took latitude, which is $51^{\circ} 18' 19'' N.$ I then proceeded down stream and camped at the mouth of a creek that falls into the Columbia River on its easterly side, about 6 miles below the mouth of Blackberry River. The Indians tell me that the valley of the Blackberry River affords the best pass through the mountains to the eastward (see Dr. Hector's report). They say the mountain sleep abound on the mountains south of this river, and the cariboo on those north of it, but that the latter is not found south of the mouth of Kicking Horse River; also, that the large salmon (white) do not go further up stream than the Kicking Horse River. The banks of river are now covered with a dense growth of pine, cedar, spruce, fir, birch, &c. Road building along the right bank of the Columbia River, from its source to this point, will be comparatively easy.

Friday, September 7th.—Left camp at 7.30 a.m., and almost immediately got into a cañon where the stream is in many places very rapid and narrow, and the rocks of a slate formation. I think at the stage the water was at when I passed here that a steamer could get through this cañon, but the rapids a short distance below, and which extend some 3 or 4 miles in length, are in many places shallow and full of boulders, and I fear un navigable. I stopped at the mouth of a large creek which falls into the Columbia on its westerly side, in latitude $51^{\circ} 31' 20'' N.$ The Indians say a trail from Gold River might strike the Columbia at the mouth of this creek, but it would have to be taken over much higher ground than if brought to mouth of Bushey River. They tell me that the south branch of this stream heads near the north branch of the Stillman-Clear River, and that the divide between these two streams is low, and would afford a very level line for a trail. Should a trail or road be opened along the east or right bank of the Columbia, it should leave the banks of the main river immediately above the State Cañon and, passing through a low valley, strike the main river at a point nearly opposite the mouth of the Bushey River. Timber about the same as on that portion.

Saturday, September 8th.—Ran down to the mouth of the Bushey River, and then crossed over to the opposite side of the Columbia, where I stopped at the mouth of a large stream, about $\frac{1}{2}$ of a mile below the mouth of Bushey River; I here took the latitude, which is $51^{\circ} 44' 45'' N.$ From the mouth of this stream there is a low valley

running in a south-easterly direction to the head of the Slate Cañon. About 1½ miles north of the point where I took the latitude, we came to the head of some very bad rapids (the worst on the Columbia River), which we afterwards ascertained extended some 4 miles in length. There is a trail from the head of these rapids to the lower end of the worst of them. I had my instruments and books packed over this trail, and took the canoes down by the river. After 5 hours hard work, most of the time in the water, we succeeded, after packing, poling, and lowering the canoes over the falls and vines, in reaching the end of the trail before referred to; we ran about a mile below this point, and camped on the right bank of river. The rocks here are generally of a slate formation. Many steep side hills and some rock would probably be encountered in building a road along the east bank of river; but it might possibly be kept on some high benches that I only partially examined. Timber same as before.

Sunday, September 9th.—Having again repaired the canoes, we left camp at 9:30 a.m., but in running a rapid, about a ½ of a mile below camp, my canoe was thrown on some rocks and much injured, and the other canoe, which was immediately behind, ran into mine and broke about 2 feet off her bow; we filled up the holes with blankets and ran down to the south end of Kinbasket Lake, where we repaired them, and I took the latitude, which is $51^{\circ} 54' 36''$ N. We then proceeded to the lower end of Kinbasket Lake and camped. This lake is about 8 miles in length, and there are many shoals at the upper or south end of it; we did not pass any bad rapids to-day. The mountains on both banks are high, and the shores rocky. On the easterly side of the lake the mountains are composed of slates. The Indian trail from the mouth of Jordan Creek, terminates at the entrance of a low, narrow valley, through which a stream flows. At the south-westerly end of this lake, a large stream also falls into Kinbasket Lake, at its south-easterly corner, and the Indians tell me there is coal a short distance up it. Dense woods covered the banks of river and mountain sides all the distance travelled to-day.

Monday, September 10th.—Left camp at 8 a.m., and immediately at the foot of lake we encountered rapids that extended the whole distance, 9 or 10 miles, travelled to-day. It might be possible at a high stage of water to get a steamer over these rapids with lines, but now they are too shallow and there are many boulders which are not covered with water. The mountains on both sides of river are high and steep, and road building along the most of this portion of the valley would be expensive. I walked the whole distance travelled to-day, and the Indians ran, dropped, and portaged the canoes over the rapids, &c., and were most of the day in the water.

Tuesday, September 11th.—Started at 7 a.m., with the intention of running to the Boat Encampment and getting the latitude, and then proceeding on to Wilson's Landing, but I unfortunately lost my protractor, and was obliged to go back for it, which delayed me two hours, and I did not reach the above place until 1 p.m. I therefore camped, as I was anxious to determine the latitude of this place accurately. The whole distance travelled to-day was a succession of rapids, and about ½ of a mile from the junction of the Columbia with the Canoe River is a cañon, through which the water runs at a very rapid rate. A bridge might be thrown across at this place. The Boat Encampment, which is on the angle formed by the Columbia and the river that flows from the Athabasca Pass, is a point I think destined, before very long, to become of some importance, as it is at the confluence of three large rivers, and is the terminus of the Athabasca Pass. There is a good deal of level land all around it, and the mountains to the eastward are of a slate formation. The colour of the water of the Canoe River is a dark muddy brown; that of the Columbia River, and also of the large tributary flowing from the Athabasca Pass, of a dirty, whitish colour. The junction of the Canoe with the Columbia River is the most northerly point of the latter.

Wednesday, September 12th.—Took the latitude of the Boat Encampment, which is $52^{\circ} 7' 31''$ N., and then ran down the river about 25 miles and camped. The current of the river for the 7 miles immediately below the Boat Encampment is very swift, and will probably average 7 miles per hour; there are several rapids on this portion of the river. For the next 18 miles the current is not so rapid, and will probably not average more than ½ miles per hour. There are two good places for bridging the river some 8 miles below the Canoe River, the Columbia at these two points being about 120 and 175 feet in width; thick growth of timber on both sides of river. The easterly bank of river best for a road, as with the exception of two short points of rock a road can be carried over low flats and benches the whole distance. The opposite side does not offer any serious obstacles to road building, but to construct one along it would be much more expensive.

Thursday, September 13th.—Ran down to Wilson's Landing, a distance of about 7 or 8 miles; passed several rapids, which would be bad for steamboat navigation, and lines would be required to get steamers over them. There is a steep, rocky bluff on the left bank of the river, a short distance above Wilson's Landing, and would be expensive to take a road around. I took the latitude of Wilson's Landing, which I made $51^{\circ} 40'$ N. I here learnt that the Officer administering the Government, the Surveyor General, and Mr. Ball would camp this evening at Kirby's Landing, I therefore ran down the river to that point, where I met them,

I remained a few days at the Columbia and French Creek, and then returned to New Westminster, which I reached on the 18th of October.

COLUMBIA RIVER EXPLORATION, 1866.

TABLE OF LATITUDES.
STATIONS SHOWN ON THE OFFICIAL MAP.

	°	'	"
Fort Shepherd.....	49	1	7
Wild Horse Creek.....	49	28	51
Small creek, one mile north of Columbia Lake, east bank Columbia River.....	50	19	55
Ambsakit's Crossing.....	50	47	3
Ambsakit's Camp (Indian fishery).....	50	49	40
Mouth of Kicking Horse River.....	51	18	19
Mouth of large creek, nearly opposite mouth of Dushey River.....	51	44	45
Island, south end of Kinuskit Lake.....	51	54	20
Beet Encampment.....	52	7	31
Wilson's Landing.....	51	40	00

The above were taken with a Box Sextant.

W. MOBERLY.

MR. TURNBULL'S JOURNAL.

June 19th.—Left French Creek, with Mr. Moberly, en route for Seymour, my instructions being to proceed to the latter place, there to make arrangements for supplies, and then start for Eagle Creek (southern arm of Shuswap Lake), for the purpose of examining in detail the pass formerly explored by Mr. Moberly, and known by the name of Eagle Creek Pass. Camped with Mr. Moberly at Howell's camp, on the French Creek trail.

June 20th.—Started about 8 a.m., dry fine, and reached Kirby's Landing about dusk. Hired one Indian (Nareisse) and a white man (Fred. (Noreisse) to accompany me through the pass; also got two of Mr. Moberly's Indians (Papoon and Catus Jim).

June 21st.—Remained at Kirby's Landing, preparing for the journey.

June 22nd.—Left Kirby's Landing at 8 a.m., with my party and stores, and reached the summit of the mountain, between Seymour and Kirby's, about noon, where I found Mr. Hiet completed travelling off snow, corduroying, &c., &c. Had dinner at his camp, after which I again started, and about dusk reached Mr. Layton's camp. Found the trail in many places very soft. Camped with Mr. Layton.

June 23rd.—Morning stormy and wet; cleared off about 10 a.m. Started shortly afterwards, and reached Seymour about 5.30 p.m.

June 24th.—Sunday; remained at Seymour.

June 25th.—Getting supplies and packing up do. Making arrangements about boats, &c. Purchased one flat bottomed boat. Making up accounts, &c.

June 26th.—Morning fine; started about 9 a.m., and camped about 6 p.m., on the east shore of the Shuswap Lake, about opposite to Cape Horn.

June 27th.—Started about 8 a.m., and reached the mouth of Eagle Creek about 4 p.m. Put up a notice at the mouth of creek respecting Government Reserve. Found an encampment of Indians, one of whom died a few minutes after I reached the camp. Engaged one Indian as my guide, and purchased a small bark canoe to convey my stores up the Eagle Creek. Camped at mouth of creek. Day very sultry.

June 28th.—Remained in camp until noon, in order to get latitude, but failed to get a glimpse of the sun. I therefore started up stream in the bark canoe, examining both banks as I went along, which I found in every respect favourable for any description of road. The river is very winding in its course, but quite navigable for river steamboats. Landed at all points where the river neared the north bank of the valley, and found that near the base of the mountain an excellent dry road can be built for very moderate cost, the standing timber being much scattered and the ground very clear of fallen timber. The road may be made on nearly a dead level, and will be perfectly dry, as the bottom consists exclusively of gravel and sand. Had to camp about a mile up stream, in consequence of a heavy thunder storm, heavy rains, strong winds, &c.

June 29th.—Started about 8 a.m. Day dry, hot, and cloudless. Examined both river and valley alternately as I ascended; the timber I found more dense, and the underbrush almost impenetrable. The cost of road building, however, would be but trifling, as the fallen timber is light, and no side hills whatever; the ground is eminently adapted for road building, as it is perfectly dry and solid, and I believe will prove so the whole year round. As the day before, the

road may be brought on a dead level. The river still continues its meandering course, and sweeps alternately each bank of the valley. Its banks for some distance back, on each side, are covered with a thick growth of deciduous trees, shrubs, berry bushes, &c. The river throughout averages about 4 chains wide, with a current of about 3½ or 4 miles an hour, and it is in every respect well suited for river steamboats. Camped on the north bank of the river, about 10 miles from its mouth.

June 30th.—Started about 8 a.m. Found the valley to continue in character as the day before, the hill sides on the north more bare of timber, but covered in places with excellent feed of first class quality. About 14 miles from the mouth, the valley is narrowed by rocky spurs, but immediately opens again to its usual width. To round the latter narrows, the road will have to be brought over a stony narrow flat, covered in places with very heavy beeches. Beyond the narrow, passed over several very fine open flats, covered only with small cottonwood trees, wild flowers, shrubs, strawberries, &c.; could be easily farmed, and would be an excellent site for a vegetable house. Camped on the north bank of the river, about 18 miles from its mouth, on a beautifully ornamented flat, covered with wild flowers, low trees, and strawberries. This point I consider the terminus of steam navigation, at the present stage of water. Between this point and the mouth of the river, it will be necessary to cut out a number of snags and overhanging logs, which might otherwise prove dangerous, owing to frequent bends of the river.

July 1st.—On getting up this morning I found that one of my Indians (Gaitan Jim) had left during the night, taking with him my bark canoe. I am therefore compelled to take entirely to the bank with my packs, &c., and distribute his pack amongst the rest. I found it very difficult to make much headway, owing to the thickness of the bush, fallen logs, &c. As soon as I reached near to the base of the mountains (on the north side) I continued straight on my course, and found the country as before described. A 12 foot forest clearance may be made at an average of about \$140 per mile, with a narrow graded path in its centre. There will be no extraordinary of any consequence necessary. For the above sum the trail may be brought on a dead level, and traverse dry gravel flats the whole way. There are but few streams putting in from the mountains, and they are all confined to narrow, deep channels, not trickling all over the flats and hillsides, as is generally the case, and which is the main reason why trails are so frequently cut up into mud-holes. Camped on the banks of a small stream, having only completed a distance of 2½ miles in my straight course. Day hot and sultry.

July 2nd.—Started about 6 a.m., but could not get along at any speed, owing to the weight of my packs, and the difficult travelling. Character of valley and road building still the same. Occasionally passed over low benches, covered only with an open growth of young pine and cottonwood. The large timber having been entirely burnt off, these benches may all be taken advantage of, and will very materially lessen the cost of trail or road. Camped about 2 miles from the North Forks of the river. Day very hot.

July 3rd.—Started about 8 a.m., and reached the Forks about 1 p.m., and found it impossible to cross the North Fork at this point. Sent Mr. Crowder down stream with one Indian, to endeavour to find a crossing by means of raft or otherwise, and started up stream myself with the other Indian, for the same purpose, but could not find any place to cross, owing to the width and rapidity of the current, at its present stage. The Indians who accompany me are both accustomed to beating and crossing rivers, and they agree in opinion that an attempt to cross by means of raft would only result in the loss of our provisions, probably our lives; and as I rely more on their judgment than on my own, on such matters, I will not make the attempt; but will explore up the North Forks until I reach its head waters. From thence, after examining the divide which separates it from the Columbia, I will make the best of my way either to the Belly or to Kirby's Landing. As no one has hitherto examined this valley, and as Mr. Moberly had expressed a wish for me to do so if possible, I think, under the present circumstances, it is the only course for me to pursue. I will, therefore, to-morrow proceed up the valley, and trust to my gun for provisions should I fall short.

July 4th.—Remained in camp all day, in consequence of heavy rain and fog.

July 5th.—Started about 8 a.m.—day fine—and travelled along the west bank of the North Fork branch. 1½ miles above the forks the river is hemmed in by steep, precipitous bluffs and slides, and runs with great rapidity in a succession of low falls. These bluffs are, however, low, therefore should it at any time become necessary to bring a road or trail up the North Forks, it can be brought over the bluffs without incurring any steep grade or the least blasting. At the commencement of this cañon, the river is not more than 60 or 70 feet wide, and I am of opinion it will be the best point to cross with mule trail, or possibly with a wagon road, should a road or trail be made to the Columbia. At the latter mentioned cañon, I again endeavored to cross by falling trees over the river. They, however, either fell short or were broken to pieces. On the opposite side there are several trees that could be easily thrown across. Having no other alternative, I again started up stream. After leaving the cañon (which is about ½ mile long) the valley again opens and assumes the same character as before. The flats along both sides of the river are low and very lightly timbered, and offer every facility for any description of road building. The streams putting into the river are all confined in good channels, and are easily crossed. Taking it at an average, a good wide trail can be built for about \$140 or \$150 a mile. Camped about 4th, on the west bank of the river, about 6 miles from the Forks.

July 6th.—Started about 6 a.m.—day fine—and followed along the low benches that border the west bank of the river. For the first 2 miles the benches are wide and heavily timbered, and gradually cut up by small streams from the mountains, the fallen logs are very thick, the underbrush very

cano and angled. From the latter point the flats narrow, and in places the hillsides slope gradually to the river's edge. Both flats and hill sides continue thickly wooded and much blanketed with fallen logs. The whole of the distance travelled to-day, trail making is of the lightest description. Day's travel about 5 miles.

July 16th.—Started about 10 a.m.—morning foggy and wet—and travelled along the west bank as before; the valley still wide and low, but the flats and hill sides more encumbered with fallen timber; the standing timber is also heavier and the underbrush of the worst possible description. Camped about sundown, on the bank of the river, near to a large tract of swamp meadow land, covered with excellent grass. Day's travel about 4 miles.

July 17th.—Started about 9 a.m. Day foggy, bush very wet and miserable. For the first two miles the valley continues the same as described yesterday; it then narrows considerably and rises with greater rapidity. In many places the hill sides fall with steep slopes to the river's edge, and are well dotted with large rocks and boulders; the underbrush during the whole day's march of the worst possible description; the fallen timber also very thick; no engineering difficulties, however, of any note in the way of trail making. Day's travel about 4 miles.

July 18th.—Started about 8.30 a.m. After about a mile's travel, the standing timber almost entirely disappears, and in its place the bottom and hill side is covered with a tall, thick growth of mountain willow, so thick and tangled that I was scarcely able to force my way through it. The creek continues to rise rapidly for about 4 miles, when the summit is gained; at which point I found the barometer to register 26,500, somewhere about 2,000 feet above the mouth of Eagle Creek. The summit is covered with a thick growth of fir, but with very little underbrush. The creek terminates in a small lake or swamp. The valley, however, still continues in the same course, and about 1 mile on a small creek joins it from the east, which falls to the northward, through the bottom of the valley, in a very winding manner. Camped about 1½ miles north of the summit. Day's travel about 6½ miles.

July 19th.—Morning showery and foggy up to 10 a.m., after which very heavy rain all day. Remained in camp. Sent the Indians out to see if they could shoot anything.

July 20th.—Morning still showery and foggy; but having no provisions, started about 8 a.m. along the bottom of the valley, and found it to fall very gradually in a northerly direction, still wide and heavily timbered with fir and cedars and dense underbrush. 3 miles from the summit a small creek joins it from the east. The latter creek springs from a high snow peak about 2 miles back. A mile further on a second creek joins it from the same direction, which also terminates in a high divide, separating it from the Columbia. From this same divide, a creek heads which empties into the Columbia River, about 24 miles below Kirby's Landing. 2 miles further on, the valley turns westwards, and gradually falls towards Seymour. At the turning point it is joined by several creeks, which all terminate in the Kirby Divide or summit of the Government trail. The largest of these creeks I followed, and found that it headed from nearly the same point as the summit of the Government trail. Camped there about dusk.

July 21st.—Not having had any provisions for nearly two days, started with Mr. Cordace to shoot ground hogs. Found them very plentiful. We shot six and had an excellent feed, and camped within a mile of the Government trail. Day foggy and showery.

July 22nd.—Heavy rain and fog. Remained in camp all day.

July 23rd.—Started about 9 a.m.—morning fine—and reached Kirby's Landing about 4 p.m., where I found Mr. Moberly and Mr. Howell camped.

July 24th and 25th.—Remained at Kirby's Landing waiting for supplies, which were on their way from Seymour.

July 26th.—Started about 8 a.m. down the Columbia River, accompanied by Mr. Howell and two Indians, my instructions being to proceed to the Eddy, there to *cache* the chief portion of my stores and provisions, and then to explore to the north fork of the Eagle Creek pass. After which I am to proceed to the head of the Astorway Lake, via the Kootenay River, and explore in that direction. Camped at the head of the Little Dalles.

July 27th.—Finding that it would be dangerous to run my boat through the Little Dalles I made a portage of my provisions, and let the boat steer its own way through. The boat was little over a minute in getting to the bottom of the Dalles, where I had an Indian with canoe ready to catch it. Got the boat all right, then started down stream, and camped at the Eddy.

July 28th.—Making a *cache* of my provisions and stores, and arranging my packs for my trip to Eagle Creek, North Forks.

July 29th.—Started up the valley of the Eagle River Pass, following along its north bank. Along the whole way the route lay over splendid low benches, very little in altitude above the bottom of stream; the timber throughout is very light, and consists exclusively of pine and cedar of moderate growth; the underbrush and fallen timber also very light; very few streams entering into the valley, and road making of the most trifling description. Three miles up the valley, the benches are dotted with huge fragments of granite rock and boulders; by keeping, however, close to the base of the mountains, or nearer to the edge of the stream, they are all avoided.

The bottom (close to the stream) is thickly covered with a growth of tangled willows, and is swampy; in many places open patches of swamp grass meadow are to be seen. About 5 miles up, the valley begins to narrow, and the meadows and swamps at bottom appear more extensive; road building still light, and of the same description as before. All the meadows and swamps are entirely avoided by following the benches. From the latter point, viz., 5 miles from the Eddy, the valley continues to narrow, and is intersected by several small streams from the mountains. $1\frac{1}{2}$ miles on, the summit or dividing ridge is struck, which I found by barometer to register 27-030. Immediately to the west of this ridge, the first small lake is situated; camped at the east end of the lake, having completed a distance of about $7\frac{1}{2}$ miles.

July 21st.—Morning showery and foggy. Having completed the construction of a small raft, started up the centre of lake, from which position I could well examine, roughly, each shore. I found the lake about 40 chains in length, by about 20 chains in width, very deep, and closely hemmed in on both sides by steep, precipitous mountain spurs, well dotted with high bluffs, slides, and precipices. As I intend to examine both shores in detail on my return trip, I cannot, at present, say which will be the best route for the road; my impression, however, is that the south shore will be found to be the best, as the bluffs are less numerous, and the hill sides and slides less precipitous. The north lake is situated about $\frac{3}{4}$ of a mile to the north-west, and is connected with the latter by a wide meandering stream; the trail may be brought on either side, with equal cost, as the entire distance is over level, timbered flats. Towards the head, or east end of the lake, the valley is swamped, in consequence of beaver dams, and is covered with excellent grass at low stage of water, and will afford abundance of food for animals; the lake is similar to the last as regards length and breadth, but not having such steep and precipitous shores. A trail may be brought on either side, without incurring any serious blasting, by keeping close to the edge of the lake, and by adopting short, steep pitches in a few places. Until my return, I am not prepared to state as to which is the best route. From the end of the latter lake, the valley begins to widen, and is bordered by more sloping hills; the flats at bottom are of the same character as regards timber, cost of road, &c. Camped about $1\frac{1}{2}$ miles from lake No. 2. Very heavy rain nearly all day.

July 22nd.—Morning still wet. Started about 8 a. m. along the bottom of valley as before, through underbrush of the worst possible description; found the flats more encumbered with fallen logs; examined both banks, and am of opinion that the north shore will be the most eligible for road or trail, as it is both shorter and can be made at less cost. Camped at the head of the 3rd lake, and made a raft capable of carrying myself and party.

July 23rd.—Day, fine. Started about 8 a. m. along the centre of lake; had a good sight of each shore, and could easily see that the north bank was, unquestionably, the most eligible to adopt. The lake averages about $\frac{3}{4}$ a mile in width, and is about $1\frac{1}{2}$ miles in length. Near to its head, or north end, the banks are steep and broken, but only for a very short distance, they then gradually become more sloping, until reaching near to the centre of the lake, the flats are struck, which continue to the foot. I am of opinion, that by keeping along the bottom of the lake, as mentioned, at the head of the lake, a trail may be built round without any blasting of consequence. I will, however, be better prepared to describe on my return trip. From the end of the lake, I proceeded along the north bank of the valley, which I found nodulating, and not heavily timbered. As I descended, the valley gradually opened, and assumed the same character as described near the Columbia River. The river winds through the bottom in a very tortuous manner, and is much blocked up in places with drift timber. A mile from the 3 valley lake, I came to a 4th lake, about 1 mile in length, by about 30 chains in width. From what information I had received, I was led to believe that there were only 3 lakes in the valley. Camped at the head of the latter lake.

July 24th.—Started about 9 a. m.—morning showery and foggy—and travelled along the north shore of the lake, which I found was skirted with low, wooded benches, similar in character to those described between the Eddy and the first lake. Camped at the foot of the lake, owing to heavy rain, which rendered travelling through the thick bush almost impossible, with safety to our provisions.

July 25th.—Morning fine. Started about 8-30 a. m. along the north bank of the river, which I found very winding, and frequently through extensive meadow swamps, which so soon as the water falls, will afford abundance of food for animals. The character of the valley is still the same, and with the same facilities for road building. Camped about 6 miles below the 4th lake.

July 26th.—Started about 8 a. m.—morning fine and cloudless—and followed along the valley as the day before; crossed two small creeks, which will require bridges from 40 to 60 feet in length; road building still as the day previous, perfectly dry, moderately timbered flats the whole way. Made the crossing of the North Forks by 4 p. m., and camped.

July 27th.—Sent the Indians up to the cañon before mentioned, in order to cross the North Forks and get my stores, which I had *cached* on my way up the North Forks. In the meantime, I explored in all directions along the bank of the river, in order to select the best crossing or site for a bridge. From my observations, I am of opinion that at the commencement of the cañon, already mentioned, will be the best point to cross, although the distance will be a little greater. To cross lower down, I am afraid, owing to the strength of the current, its great width (200 feet), and the great quantity of drift wood which is continually passing down at high stages of water, that bridging with such a span would be very costly in the first place, and not very permanent afterwards. Still remained at the same camp.

July 28th.—Having received my *cached* stores, started back on my return trip towards the Columbia River, examining in detail the features of the country through which I passed. I am satisfied that a good level trail may be built from the Forks to the Lake No. 4, at the rate of \$140 per mile, as the whole distance is one continuous line of level flats, or gently sloping side hills. (Camped at the foot of Lake No. 4; day fine.)

July 29th.—Started about 8 a.m., and ascended to the summit of the mountain bordering the north bank of the valley, in order to get a full view of the country; reached a lofty peak, situated immediately opposite the centre of V valley lake, from it I had a very extensive view in every direction; saw up the valley of the Shuswap River, almost to where Cherry Creek joins it; appeared in all respects very favourable for my description of road or trail, being wide, low, and well supplied with excellent fuel all along its bottom. Saw a second valley, which joins the latter near its junction with V valley lake, it also appeared low and favourable. I could trace it almost to the Columbia River; it evidently leads somewhere in the vicinity of the Arrow Lakes. After making my observations, I struck down hill and joined my party at the foot of the V valley lake, and camped.

July 30th.—Started about 6 a.m., and travelled along the north shore of the lake, my Indians with stores proceeding by raft. I found that for one mile the lake was lined by a low wooded bench, along which a trail can be built for \$180 per mile, it then turns sharply to the eastward, and is bordered by steep, rocky slopes, well dotted with slides and precipices; all the bluffs, however, with the exception of two, fall short of the lake's edge, leaving ample room for a good trail above high water mark. The two bluffs which I have mentioned, are not more than 70 feet in height, and are quite accessible from the water's edge, therefore, the trail may be brought over their summits without incurring any blasting whatever. On detailed examination, the whole of the route round the lake appears less formidable than I at first anticipated, and I am confident will not cost for the whole length (about 1½ miles) more than \$800. Having completed the examination of lake, I next proceeded up the valley to the next lake. This portage is about 3 miles in length, in several places the entire bottom is swamped by beaver, the trail will consequently have to be brought round the sidehill; and in several places, owing to the bluffs descending to the bottom of the swamp, there will be required a good deal of corduroying, or low bridging. I think, however, that by keeping on the north side of the stream, the trail can be built for about \$600, across this portage. I next examined No. 2 lake, and could see that the south shore was unquestionably the best route for a line of trail or road. A low, rugged, rocky, broken bench runs completely round the lake, over which an old Indian hunting trail is plainly marked. By following this route, there will be but very little blasting, but the trail will have several short but not dangerous pitches. It is possible, that a better route may be found by keeping farther up the hill side, about 100 or 120 feet above high water mark, as the hill side appears quite sloping and free from bluffs. However, by adopting the lower route, a good trail can be made for about \$600, or thereabouts. Leaving the latter lake, I next proceeded up the valley to Lake No. 1, which is distant about 1 mile from the last lake. The trail along the latter portage will be easily built, as the entire route is one continuous wooded flat. I next examined the south shore of the lake, as it was evidently the most eligible route to adopt, and I found that there was only one short to cross, and that by keeping up about 100 feet above the lake, it could be crossed with about two chains of heavy work—such as walling, cribbing, and partial blasting—the remainder of the distance would be stiff side hill; altogether, I estimate this lake at about \$700. After completing the latter examination, I made the best of my way to the Columbia; reached the Eddy by dusk, and camped.

July 31st.—Drawing a plan, and writing a report to Mr. Moberly on my last reconnaissance through the Eagle Creek.

August 1st.—Still employed with plan and report, and preparing my stores, &c., for my next trip to the head of the Kootenay Lake. Mosquitoes, frightful.

August 2nd to 7th.—Proceeding to Fort Shepherd, in order to procure bark canoes and Indians.

August 8th and 9th.—Remained at Fort Shepherd, endeavouring to procure Indians and canoes, could not secure the services of Indians, as they were all busily engaged fishing, hunting, &c. Persuaded a white man (Dick Fry) to accompany me with his canoes as far as the smooth water of the Kootenay, at which point he was to return by land, leaving me the two bark canoes.

August 10th.—Started up the Columbia River en route for the Kootenay Lake. As I have already described the route up the Columbia, and as Mr. Dewdney has also described the Kootenay valley, I will not, at the present time, attempt any description. Camped about 15 miles from Shepherd.

August 11th.—Started about 8 a.m., and reached the mouth of the Kootenay River, by 5 p.m. Day fine.

August 12th.—Started up the Kootenay River, and camped 1½ miles up, at foot of the first portage, owing to thunderstorm, heavy rains, &c.

August 13th.—Owing to the roughness and rapidity of the river, had to make a 1½ mile portage over a very bad trail. Camped at the end of the portage.

August 14th.—Canoed up stream, and camped at the foot of the first falls, having completed a distance of about 8½ miles; river very rapid and dangerous the whole way.

August 15th.—Made a 3½ mile portage of our canoes, provisions, &c., and camped at the end of the portage. Was with a party of prospectors, who were endeavouring to get up the river; they have been 3 weeks getting so far; had they bark canoes, they would have made the trip in 3 days.

August 16th.—Made about 5 miles up river, and camped; had to make several small portages of provisions and canoes.

August 17th.—Cleared all the bad water by noon, and discharged Dick Fry; made about 10 miles further and camped; water from the last rapid without current.

August 18th to 20th.—Canoeing to the head of the Kootenay Lake.

August 21st.—Canoeing up the stream separating the lower and upper Kootenay Lakes, which I found very rapid. Had very hard work to stem the current with our bark canoes.

August 22nd.—Reached the foot of Kinbasket's trail. Found no Indians there.

August 23rd.—Canoeing to the head of the upper Kootenay, in order to secure the assistance of Indians. Reached the head about 4 p.m., and found one family encamped there.

August 24th.—Engaged an Indian (Na-how-a-chin) to accompany me to the summit of the range, *via* Creek No. 1 (see plan). He informed me that from that point I could see the whole range. Packed up stores, &c., for the trip, and also made a *cache* of provisions.

August 25th.—Started up Creek No. 1, and found it very narrow and rocky, and with a very steep grade. Bush very thick, and abundance of fallen timber. Camped about 4 miles up stream.

August 26th.—Continued up stream; found that the valley narrowed rapidly, and to rise with a very steep grade. About noon I came to where it terminated in several steep gulches. Ascended to the summit by one of the gulches, and came to eternal snow and ice. Could see nothing but one continuous field of ice peaks, &c. Waited on this summit for the appearance of my Indians. They, however, have evidently taken up the mountain by some other gulch. I am, therefore, compelled to take shelter for the night behind a few stunted, withered pines, without blankets or food.

August 27th.—Cannot imagine where the Indians can have camped. Can see in every direction, but not the least sign of fire or camp. Descended to the bottom of valley, and searched in every direction for their tracks, but failed to get the slightest trace of them. Being very hungry, I gave up all idea of hunting them up, therefore started with Mr. Howell to our *cache* at the head of the lake, well aware that the Indians would soon trace us and return. — My next idea is to explore the Creeks Nos. 2 and 3 (see plan), and by one of them cross over to the head waters of the Columbia. Reached our *cache* a little after sundown, in a very hungry state.

August 28th.—Remained in camp all day, waiting the return of my Indians and guide.

August 29th.—Remained in camp. Indians returned a little after dusk, with a very confused account of where they had been. Discharged Na-how-a-chin, as I could see that he was perfectly useless and not fit to travel.

August 30th.—Left the head of the lake, and camped at the foot of Kinbasket's trail, between Creeks Nos. 2 and 3.

August 31st.—Rain and fog. Remained in camp, preparing packs, &c., for next trip. Found that the greater portion of my flour was destroyed. Had to empty it out into new bags.

September 1st.—Started up the No. 2 Creek. Found it wide and low, and in every respect quite favorable for trail making, but very heavily timbered and blocked up with fallen logs, &c. Very slow travelling in consequence. Camped about 5 miles up stream.

September 2nd.—In consequence of the difficulty in getting along the bottom of the valley, and in order to get a good view of the country, and escape the timber, I began the ascent of the mountain separating Creeks Nos. 2 and 3. Reached the summit about dusk. Could see up both creeks for a considerable distance. Could also see up the N.W. Creek (see plan) shown running into the head of upper Kootenay Lake. As far as the eye could reach it appeared low, wide, and must join somewhere in the vicinity of the summit of the east branch of the Illecille-want River. I certainly think that if the latter creek was properly prospected gold would be found in paying quantities, as it has every appearance of being a gold-bearing country, and must drain nearly the whole of the country lying between this and the summit of Gold Stream. For trail making, however, the valley would be useless, as it would be as great a bend as the Big Bend itself. Camped on the summit.

September 3rd.—Travelled along the ridge in an easterly direction, keeping in view both valleys below. Found it quite as difficult to make head way above as below, owing to the broken nature of the ridge. Made very little progress in consequence.

September 4th.—Seeing that it would be impossible for me, owing to the roughness of the country, to examine the whole of the range towards the head waters of St. Mary's and the head waters of the Columbia, I divided my party and provisions with Mr. Howell, and gave him instructions to cross over Creek No. 3, gain the summit of the mountains to the west, and then travel in a southerly direction, and find out the head of St. Mary's Creek; after which find out whether any of the creeks emptying into the Kootenay Lake headed in the direction of St. Mary's Creek; after which to join me at our *cache* at the foot of Kinbasket's trail. For my part, I determined to travel in an easterly direction, ascertain the height of the directed head of Creek

Nos. 2 and 3, then cross over the divide by some other way to the head waters of the Columbia. Travelled along the summit, as the day before, towards the head of the creeks before mentioned. Travelling getting much more difficult, continually ascending and descending steep, precipitous rocks and slides. Camped about dusk, at the foot of a high, rocky peak, which I could neither cross over nor round in any way.

September 5th.—Not being able to proceed further along the ridge, I descended to the bottom of Valley No. 3. On my way down, my Indian (Narcisse) got afraid whilst crossing a bluff, lost his presence of mind, and threw away his pack containing the whole of my provisions. I sought for it in every direction, but could not get the least trace of it. Had to camp without food. I am rather afraid I shall have to return to my *cave* a second time without food.

September 6th.—Started at sunrise, and searched in all directions for the missing pack. Had to scramble amongst rocks and precipices, at the risk of my neck. About noon, saw it behind a large boulder, on a shelf of rock, and had the greatest difficulty in getting at it. After partaking of food, again started and made the bottom of valley about dusk, and camped.

September 7th.—Travelled along the bottom of the valley towards the head waters, and found it low, wide, and in every respect favourable for any description of road, but very heavily timbered, and blocked with fallen logs. About dusk I came to where it terminated suddenly in three steep gulches. Camped at the foot of the centre gulch.

September 8th.—Started about sunrise, and commenced the ascent of the centre divide, it being evidently the lowest of the three. On reaching the summit, I found that immediately on the opposite side a large open valley took its head and bore straight to the Columbia River, in a northerly direction. The latter valley I make no doubt is one of the Toby Creeks shown on plan. The divide is quite narrow on the top—not more than a chain—and descends on both sides, particularly the eastern slope, with great rapidity. Its altitude above the sea I found by barometer to be about 5,000. The bottom of each valley is not more than ½ mile apart in a horizontal line. For a mile trail the divide would answer, as by zig-zagging it could be brought up and down with a good grade, and could, owing to its narrowness, be easily cleared of snow. The summit itself would be a trailing matter, as it is not more than a chain wide. The divide, however, will never answer for a wagon road owing to its height and steepness. Having examined the divide, I descended to the valley to the eastward, as I am determined to proceed down it to the Columbia, determine the latitude of the latter, and collect what information I can of other routes, supply myself with a fresh stock of provisions, then return and examine all the divides to the northward. Camped about 1½ miles from the summit, and put myself and Indian under very short allowance of provisions.

September 9th.—Started about sunrise, and travelled as quick as I could down stream, my stock of provisions being now almost exhausted. Camped about 10 miles down. Had to wade across a very large stream putting in from the north-east (see plan at C.) I will explore this on my return. The whole of the distance travelled to-day a trail may be made for \$120 per mile. Plenty of first class feed in every direction.

September 10th.—Travelled down stream. Everything as regards road building of the most simple description, and abundance of feed. Travelling difficult, owing to fallen logs and thick brush. Crossed a second large low valley at D. I will also examine the head waters of this valley on my return, as they appear quite low and may have low divides. Have to camp without supper to-night. Indian very sulky.

September 11th.—Started about sunrise. After about an hour's travel killed 3 grouse. Stopped and cooked two of them. Started again, and in a couple of hours struck brush grass flats and side-hills, and about noon came to the low, rolling hills which border the Columbia. Found horse trails in every direction, but could not see any other signs of Indians. Travelled about until dark, but failed to strike across any Indians or camp, therefore had to camp without provisions.

September 12th.—Travelled up the Columbia, and about 9 a.m. came across an Indian on horse-back, who directed me to where the Indians were encamped. On reaching which I found about 30 Kootenay Indians engaged fishing the most vile description of salmon, which I found was the only food they had in their possession. Hired a horse from one of them, and started down stream in order to find Xintaskit, and see if I could get any provisions from him, and also information respecting the different routes. Had not gone far when I met in with his two sons, who informed me that he had gone down the Columbia with Mr. Molerly. They had nothing but the same description of salmon, and could give me no legitimate information respecting the country. Returned to my camp, resolved to send an Indian to Wild Horse, if possible, and get a supply from that quarter.

September 13th.—Made arrangements with an Indian to ride to Wild Horse for a supply of provisions, and to be back in three days.

September 14th and 15th.—Took latitude.

September 16th.—About 10 a.m. the Indian returned from Wild Horse with my provisions. Hired one of the Kootenay Indians to go with me on my return trip, and started about 1 p.m. for the mouth of the valley of Toby Creek. Camped about 1 mile from its junction with the Columbia.

September 17th.—Travelled up the valley, and camped about dusk at the junction of the upper branch (see plan at C.) On passing the junction at D., I could see that it must lead somewhere from the same direction as the branch C., therefore, I made up my mind to explore the latter, and from its divide proceed in a northerly direction and examine the other.

September 18th.—Travelled up the valley at C., and found it very favourable for road making. By run-down, I came to where it terminated abruptly in the face of a huge mountain covered with glaciers, and perfectly useless and unfit for anything in the way of routes.

September 19th.—Started up the summit for the purpose of getting to the summit of D. branch valley. Had the greatest difficulty in getting the top, owing to the steepness and broken nature of the glaciers. Had to fish my Indian out of several deep cracks. On reaching the summit, I found that valley D. sprang from the same divide (see plan.) I next travelled for about 2 miles in a northerly direction over fields of ice, then struck down a hill until I got to wood and camped. My intention now is to travel on the range until I ascertain something about the head waters of the main branch (see plan at Upper Kootenay Lake.)

September 20th.—Continued to travel on the ice. My Indian, who is now thoroughly afraid, is very sulky, and it is only by threats that I get him along.

September 21st to 24th.—Continued to travel in a northerly direction along the summit, which I found to be one unbroken chain of the most wild and rugged peaks men can possibly imagine. On the evening of the 24th, I reached a point on the range from which I could see the course of the Spille-mu-chiem, also the N.E. valley shown on plan, emptying into the Upper Kootenay Lake, the divide being much more formidable than any I had formerly examined. So being now perfectly convinced that no pass can exist through this range up to this point, I shall at once return to my cache. I anticipate a rough time in doing so, as my provisions are nearly out.

September 25th to 29th.—Returning to the cache, which point I gained on the evening of the 29th, but in a very weak condition from the want of food. Found Mr. Howell at the cache, where he had been for 12 days. I was much afraid he had left for Shepherd, thinking me either lost or having gone round by Wild Horse. Had he done so, I would have been in rather an awkward fix, as I had neither axe, provisions, tobacco, or anything else.

September 30th to October 6th.—Travelling to Fort Shepherd with back caches; was several times very hard up for provisions, and had one or two rather narrow escapes of being swamped in the hills of the Kootenay River. Met the four prospectors (of whom I have spoken) working their way up the river with their winter's provisions; they spoke of having good prospects somewhere between the mouth of Kootenay River and the lake, and were going to spend the winter there, and do what work they could. Reached Fort Shepherd on the evening of the 6th.

October 7th.—I am informed by Mr. Jane that my instructions are on board the Forty-nine, and that Mr. Moberly has gone to New Westminster; therefore, as it is very likely that my orders will be to return to New Westminster also, and as the steamer is expected down in a couple of days, I will remain here until the steamer arrives from above.

October 8th.—Waiting for steamer, making up my journal, accounts, &c.

October 9th, 10th, 11th.—At Fort Shepherd.

October 12th.—The steamer arrived from above about 10 a.m. I received my letter of introduction, which informed me that I was to make the best of my way to New Westminster, also to make the best arrangement I could about money; I tried Mr. Jane, but he could not advance; I next tried Mr. Hardisty, who very kindly advanced me \$37.5; with this sum I was enabled to pay off two of my Indians, and all my bills; one Indian, however, I could not pay off, but as he is going to Kamloops, I intend bringing him with me as far as Osoyoos, where, perhaps, Mr. Haynes may settle with him.

October 13th.—Receiving the money from Mr. Hardisty; paying off my Indians, &c., &c.

October 14th to 21st.—Travelling to Osoyoos Lake with Mr. Brown's train. Arranged with Mr. Haynes to pay off my Indian.

October 22nd to 28th.—Travelling to Hope; found the Hope mountain trail in excellent condition, and wanting no repairs, more than the removal of a few logs, and repairs on one or two small bridges, which have been lately destroyed by fire.

October 29th.—On board steamer for New Westminster.

J. TURNBULL.

MR. HOWELL'S JOURNAL.

September 4th.—Having received orders from Mr. Turnbull to proceed and examine the district between Kootenay Lake and the head of St. Mary's River, I started across divide between Osoyoos Mts. 2 and 3, crossing the latter about 5 miles from its mouth. Found the bottom low and favourable for a road. As Mr. Turnbull examined this valley, I commenced the ascent on the south side, and camped about one mile up.

September 5th.—Continued the ascent of the mountain, as shown on Mr. Turnbull's tracing, in a south-easterly direction, and reached the summit at the head of Creek No. 4, which ends abruptly about 7 miles from its mouth, and camped.

September 6th.—Keeping along the divide in a north-easterly direction, I encamped about 6 miles from the head of Creek No. 4.

September 7th.—Gained the main mountain range, which I found covered with snow and glaciers. I could see the valley of the St. Mary's down to its mouth. Camped at the head of Creek No. 5, which terminated in snow peaks.

September 8th.—Crossed divide between Creeks Nos. 5 and 6, the latter of which also terminates in a high divide.

September 9th.—Ascended to the summit of a high peak, shown east of Creeks 5 and 6, from which I could see down the range to the mouth of the Kootenay River. From the character of the range, I am certain that all the valleys terminate in high divides; and having only sufficient provisions to carry me back, I made up my mind to return.

ROBT. HOWELL.

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